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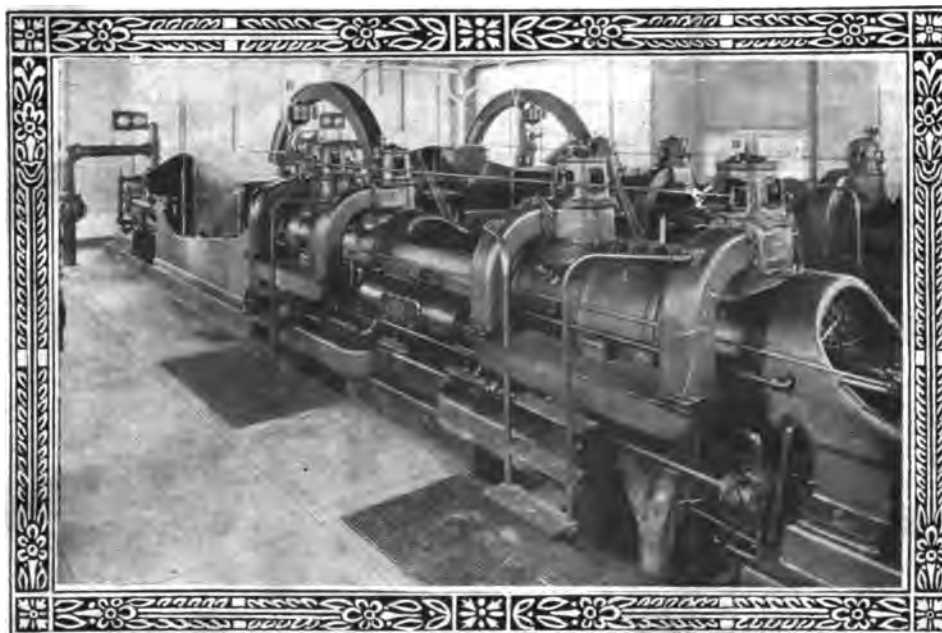
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and EXHIBITION OF SUPPLY MEN'S ASSOCIATION
Kansas City, Kan., May 15 - 17, 1922

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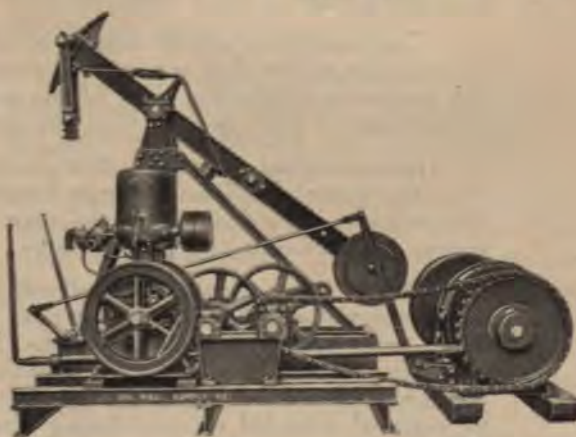
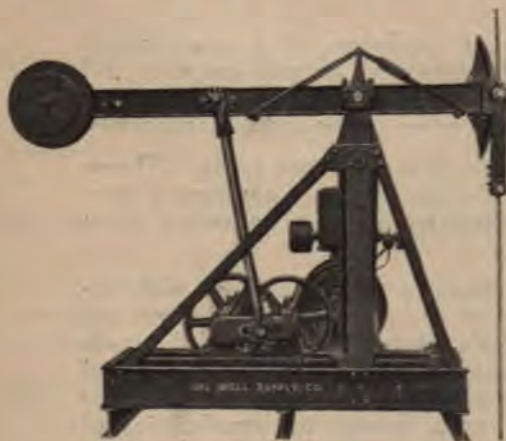


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REAL ACTIVITIES

FOR several years past, institutions and peoples have been talking about developments **that are to be**; such was the song sung by the sirens of business to encourage better times as an early prospect, even though not at the time a reality or a tangible thing.

In our natural-gas field, while there has been far less activity than during the pre-war period, men and institutions have not laid down and died, they have kept going, and as opportunity has presented they have thrust a root out in this direction, another in that direction, and the shoots of growth above-ground have shown themselves as real things. Some of the shoots have been tender and have necessitated somewhat of the hot-house principle to force their growth, but they have, nevertheless, been real outshoots that will bear delicious commercial fruit a little later on.

We are, in this issue, telling the story as written by an authority, of development of the real "man" kind, none of the hot-house order, but real outdoor, solid, substantial development, development that required thousands of tons of pipe, required a number of high capacity ditch-digging machines, about 140 motor-trucks and motor-vehicles of lighter types, the employing of field-men neither few in number nor of the cheap type; in fact, development that required large resources, money, muscle, engineering intelligence, and equipment.

Read the article, entitled, "IN WYOMING." It's not a newspaper story, it's not the exaggerated account of an exploiter. It's a story of facts. Visualize these operations, and you will experience a thrill of enthusiasm. Then go forth with a purpose to achieve as great things with as great alacrity and efficiency in other fields.

Natural gas is a thing of the future. The resources of the field as they were have been handled in a prodigal way, but the prodigal has come home with a new resolve, namely, to make natural gas in the future an appreciated thing with years of service before it. The prodigal has resolved that with the many means at hand, and methods that have been carefully worked out by thoughtful men, he will save each individual foot of gas from the hands of the wasteful, and make each cubic foot serve a purpose, whether that purpose be one of industrial or domestic service.

Each well brought in that is at all a worthy producer, since conservation is the order of the day, means vastly more to the future of natural gas than did the enormous producing wells of the past, even though the production then was by millions of feet, greater than the production of some of the more recent wells.

It is not what one **makes** that produces wealth, it is what one **saves**. Therefore, the wasteful millionaire may become, even though his riches are vast, a poverty stricken individual, while the man of far lesser means who conserves those means may become the opulent man.

Don't let's compare the wells of lesser production in the present with the enormous well-productions of the past, and then sit down in the idea that natural gas is practically a thing of the past. Instead, let's compare the well of the present with the well of the past in terms of conservation such as we understand those words to mean in these saner days of the present. Natural gas will render us years of splendid service, dating from 1922, even though its beneficiaries of the past were crazed with the idea of killing the goose that laid for them the golden eggs.

Don't bewail the past, but beget for the future.

Lucius S. Bigelow

FROM THE EDITORIAL MAIL BAG

FINANCIAL The applicant has no history of assigned materials, and the assigned history is not represented.

The following is the substance of the discussion held by the Finance Committee and representatives of the various groups before the committee after considering the statements made therein by various members, and Eugene A. Smith, Editor of News.

W e are optimistic on the banking and money situation and on investment conditions. We expect to see cheaper money and higher prices for bonds and good dividend-paying stocks this year. We want to be optimistic on the business situation, but we believe in taking the facts seriously in the face

We think that business was at its worst last May and that it is now on the up grade. Last May it was about 30 per cent below normal. In October and November it was about 13 per cent below normal. These are the estimates of the statistical department of our greatest industrial nations. We agree with the authority that when there is some slackening of activity, underling conditions are improving. Also that the permanence of the current betterment in underling economic conditions is not suggested by the very character of the movement.

The freight system in the United States is the longest and most intricate of all known systems. It has developed in a haphazard manner, without sufficient regard for what are known as the "public interest" factors. The railroads, goods carriers, express and electrical utilities, and other public utility companies are part of the "public interest" and it is a mistake to neglect the public interest.

It is regrettable that in western agriculture the farmers are so markedly handicapped by the economic conditions of the manufacturing community that they are unable to obtain the implements and other necessities that are essential to the farmer.

Mercurian lines are reported to be very strong in the spectrum of the case, much stronger than in the spectrum of the sun, with exceedingly strong lines in the part of the spectrum which are determined to be the part of the spectrum of the sun.

As a result of a contract with the U.S. Navy, the Department of Defense was placed by the government in the position of being a customer. The contract was for the purchase of a large quantity of sales effort, and the Department of Defense was the only other department in the United States that was not a customer in the use of the Department of Defense.

the point of the Department's investigation, the
and proportionately, the same is true of the
these lines are falling in the same line, the
and all industries are at a loss to find a
export and import, which is not at all the
there are very many but not many of the same

the fact that the industry has a long history of being a leading contributor to the economy and to the government.

Concerns having parents of young children avoid the temptation to "spoil" their children with too many toys that have the goldilocks name of "just right" value and function. The child's toys should be chosen to be of the standard of the current system.

[illegible]

Wages tend to rise in the short run, but will not become equalized with the price of the goods produced. In other words, the short-run equilibrium is not efficient. The reason is that a laborer's utility is not only a function of his wage, but also of his leisure. In equilibrium, the laborer will choose to work a certain number of hours, and to consume a certain amount of goods and leisure. Wages in the long run are the same.

Wages in the United States are not distributed in a particularly equitable manner, and the Government is not. It is not the much to say that in a large extent greater ability to deal with the unemployment problem will depend upon greater ability to deal with the distribution of income. But with the distribution of income in the United States, as it is now, it is not surprising that the Government in Washington, in the United States, is not able to deal with the unemployment problem in the United States.

[illegible][illegible][illegible][illegible]

Words are the only things that last forever — Hashit

Manager of the Company, stated that their sales of meters in November was the largest they have ever had in that month, and as this concern is an established one in the field, such a record cannot be attributed to some abnormal condition brought about by a new concern introducing something of a very unusual nature. The product of a meter concern is to a large extent what might be termed a "usual product."

Of course, many of the meters sold by the Sprague Company in November are not as yet in service and, therefore, are not as yet, to any large extent, rendering returns to the companies purchasing them; however, the meters ordered of the Sprague Company will undoubtedly soon be merrily clicking with only a small percentage as replacements.

In visiting various of the gas companies recently, our editor has found an upward trend, and a spirit of greater confidence than has been noticeable during the recent past. Better conditions are certainly in the making.

ASSOCIATION AMALGAMATION

THE suggestion made by President Munroe, Chief Executive for 1921 of the American Gas Association, namely, that an amalgamation of the two gas associations, the Natural Gas Association of America and the American Gas Association would be desirable, we do not at all believe to have been born of a desire to see the Natural Gas Association absorbed by the American Gas Association, but that as for instance, the National Commercial Gas-Association lost its identity only in the matter of name, it becoming the Commercial Section and the Manufacturers' Section in the American Gas Association, so we believe the thought on the part of President Munroe was that while there ought to be but one national gas association, the natural gas element now expressing itself in a separate association should continue, as a unit, but within one general gas association in the United States, that section essentially covering the phase of the gas field known as natural gas.

Whether amalgamation is or is not best, is a thing yet to be determined, but should amalgamation take place at any time in the future, then in the general office and in the directorate, the natural gas interests the manufacturing interests, and the manufactured gas interests should all be represented, thus, as it were, forming a central governing organization that would work to the general advantage of gas manufacturers, gas producers, and the manufacturers of gas appliances, gas equipment and supplies.

If desirable, it would not be necessary that the two divisions of the association formed respectively of manufactured gas men and manufacturers of their requisites, and natural gas-men and the manufacturers of their requirements should meet at one and the same time, or in one and the same city. In fact, from some viewpoints, it would be better that they should

not do so, in that the manufactured gas interests would naturally not find a meeting in certain sections of the country nearly as desirable as in other sections, and vice-versa, nor is it quite likely that the two branches of the great gas-field would find the same time of year as convenient for one as for the other.

It is true that natural gas is diminishing in volume, so far as explorations of pockets have thus far gone, but we believe there are great possibilities yet remaining. Who knows definitely that large deposits may not be awaiting future efforts, greater wells possibly than ever before.

Save for certain districts, a natural gas supply may be adequate for very many years to come, while in other districts through the mixing of natural gas and the manufactured product, a very long bridge may be built, to span the period between the present and a time when exclusively manufactured gas shall have supplanted the natural product.

We are inclined to believe that though it might be practicable in some manner to unite the two associations within a central organization leaving the two bodies to operate quite separately in the matter of details, that a large number of those who are back of the Natural Gas Association of America would object strenuously to outright amalgamation.

It was quite a different matter when the National Commercial Gas Association and the American Gas Institute came together and thus formed the American Gas Association, since those two organizations were essentially in one and the same field, simply each doing a different type of work, each necessary to the other.

Of course, the future will tell the story, and it is not for us to say yea or nay, but at least for the present amalgamation we believe to be an unknown quantity.

OKLAHOMA ASSOCIATION ANNUAL CONVENTION

THE fourth annual convention of the Oklahoma Utilities Association will be held March 14, 15 and 16, 1922, at Oklahoma City.

A number of interesting exhibits by electrical and gas manufacturers, jobbers and suppliers, will be features of the convention. A number of prominent speakers in the public utility industry are being engaged by the committee which is in charge of the arrangements. New Officers will be elected at the convention.

The present officers of the association, elected at the last annual convention, which was held in Oklahoma City, March 8, 9, and 10, 1921, are as follows:

President, John W. Shartel, Oklahoma City, vice-president and general manager, Oklahoma Railway Company; First Vice-President, C. E. Devin, manager, Apache Telephone Company, Apache, Oklahoma; Treasurer, William Mee, president, Security National Bank, Oklahoma City, Oklahoma; Manager, H. A. Lans, Oklahoma City,, Oklahoma.

The philosophy of one century is the common sense of the next.—Beecher.

In Wyoming

Pipe Line Constructed Through Rough Country Completed in Record Time in Spite of Obstacles

By R. L. LORD,
Mount Vernon, Ohio

Mr. Lord has been in active charge of the construction work discussed in the following communication which we, therefore, are enabled to publish as containing facts, although some statements contrary to statements made in the following have appeared in other publications. The following was especially written for the *NATURAL GAS INDUSTRY Magazine*.—Editor's Note.

THERE are three apparently distinct gas domes in line, running parallel and a few miles south of the Ferris Mountains, approximately thirty-five miles north of Rawlins, Wyoming. These are known as the Wertz Field at the west, where one well has been completed with a rock pressure of 1800 pounds and a volume of forty-three million cubic feet, controlled by the Producers & Refiners Corporation, of Denver, Colorado. The middle dome, known as the Mahoney Field, has several wells, owned by various companies, all of them reported to be of large volume and heavy pressure. The eastern field, known as the Ferris Dome, eighteen miles east of Wertz, has four good gas wells, controlled by the Producers & Refiners Corporation.

In early September, a contract was made between the Producers & Refiners Corporation and the Midwest Refining Company for the installation of a line, to be owned by the two companies jointly, for transporting gas from the Wertz and Ferris Fields to Casper to supply a minimum of thirty million cubic feet daily to the Midwest Refinery, which, since its combination with the Standard of Indiana Refinery during September, becomes one of the largest refineries in the world. It has previously been using from the New York Oil Company's lines, fifteen million cubic feet of gas daily, and the new line is intended to be in addition to that supply.

The Hope Engineering & Supply Company has been actively engaged in pipe work in Wyoming, beginning with the Franco-Wyoming Company oil line, built ten years ago and now owned by the Midwest Refining Company. During 1920-21, it designed and constructed the New York Oil Company's system supplying Casper, including the distribution system in that city. They had also handled work for the Producers & Refiners Corporation in Oklahoma and elsewhere and at the same time the contract between the Producers and Midwest was signed, were constructing for the Producers Company a piping system to supply the town of Riverton, including distribution system, as well as a main line from

the Sand Draw Field, twenty-one miles south of Riverton.

The joint owners of the new project desired that a line should be constructed before winter to get the system in service as quickly as possible and avoid the heavy expense of operation, in a Wyoming winter. They therefore, turned this work over to the same Hope Company, who supervised purchase of material, as well as construction. While preliminary arrangements were made on September 7, permitting placing of some orders for material and preparation of equipment, the contract was not definitely signed until September 22. About this time the survey and right-of-way contracts were started, with the construction work following close after.

The line required eighteen miles of 10-inch pipe from the Wertz Field to the Ferris Field to carry 400 pounds pressure; twenty-four miles of 12-inch pipe from Ferris through the Sand Creek Pass in the Ferris Mountains to a point just south of the Sweetwater River, expected to carry 350 pounds pressure, and forty-eight miles of 14-inch pipe from the Sweetwater River to Casper, carrying 275 pounds pressure. In addition to this, all branch lines, including drips, regulators, meters, etc., for the two fields, were handled. The pipe was furnished by the Mark Manufacturing Company from the mills at Zanesville and Indiana Harbor and was put through in record time, although some delay in the 12-inch, which should have been constructed in the early fall, tended to delay the final completion longer than was expected.

The material, amounting to over ten thousand tons, was hauled from two points, Casper and Rawlins, about one hundred and thirty miles apart, over sage-brush trails along the pipe line. Some of this pipe was hauled seventy-one miles and the average haul was nearly forty miles.

Pipe laying on the 10-inch began on October 8 on the arrival of the first couplings. These couplings were received in Rawlins late on the night of the 7th and the pipe laying began forty miles away the next morning. The 14-inch and 12-inch pipe laying was started on the arrival of the first complete material October 20th and 25th, respectively. The last joint of pipe, tying together the line, was laid in Emigrant Gap on the old Oregon Trail, twelve miles out of Casper, on December 13th, sixty-six days from the start.

The pipe was hauled approximately 30 per cent from Rawlins to a point fifty miles from that city over a

A trick is at best but a mean thing.—Le Sage.

road on which, with the exception of drilling camps, there was not one house in sight of the road for the entire distance. The section just south of Ferris Mountains and leading through the Sand Creek Pass was through a country of bare sand dunes, sometimes miles in length, and roads for trucking were made by filling the ruts in the sand with sage-brush. Trucks made two round trips in twenty-four hours from Rawlins through the Pass, even though the road was so bad that the truck running light could not go back by the same course which they followed when loaded, but found it necessary to go approximately twenty miles farther around through the next pass, known as Whisky Gap. The haul from Casper covered sixty-four miles of 14-inch and 12-inch pipe, running from Casper straight out over the hills, and was distributed in fifty-one days. Nearly one hundred and forty trucks were in use in hauling pipe from the two towns and waiting on construction camps.

The pipe was laid in a ditch 20 inches wide and 42 inches deep. Approximately eighty miles of this was dug with Buckeye ditching machines, the section through Sand Creek Pass and a few other points in rough territory being ditched by hand. Three Buckeye machines were used on a twenty-four-hour day service until the weather became so cold that operators could not handle the work during the night; a fourth machine, taken from the Riverton work, was then put on and ditching completed during the first week of December. One ditching machine accomplished 7,800 feet of which in a twenty-four-hour run. One pipe gang laid 9,300 feet of 12-inch pipe in a December day; another gang laid $8\frac{1}{4}$ miles in six consecutive days. On two different days $3\frac{1}{4}$ miles of pipe were laid by the three gangs.

The weather for the greater part was exceptionally fine, in fact, a matter of wonder to the old-timers in Wyoming, this being the first winter in the last twenty that the Sand Creek Pass was not snowed full long before the date of the completion of this work. However, a few severe winter storms interfered with the work somewhat during late November and early December. At points in the neighborhood of Ferris Mountain, temperatures as low as twenty below zero have been recorded during the progress of this work.

The line traverses a territory, ranging from 5100 to 7000 feet elevation, largely over Government land, and for a good portion of the way practically uninhabited which, when considered with the time of year, makes the construction a matter of general surprise to the gas and oil men of Wyoming, who did not believe it possible that the line could be finished before next summer. The enthusiasm and loyalty of our pipe line organization stand out in this case as an example of what such men are capable of doing when their heart is in the work.

THE PUBLIC AND THE CORPORATION

IT is rather odd to note how we often separate our discussion of gas matters, the public the utilities or gas corporation. The truth of the matter is, that while frequently not so, the two are synonymous, for the corporation operated with invested moneys of the public which turn the public is the user of, and to no small degree absolutely dependent upon, the product, be it manufactured or natural, provided by these interests.

The managers of these companies or corporations as it were, employees of the public, for it is the money of the public, either invested or spent in the purchase of the products, which pays the employee whether he be president, general manager, superintendent, or one in any position of other nature.

The public should feel it a privilege, in fact, a duty to bring to the attention of the gas company, any irregularities or discrepancies that may come to its attention. By doing so, members of the community will not be serving the company that serves them, and in various cases that they are part owners in, but also serving neighbors and themselves. On the other hand, the company should invite and gladly hail those to its offices who have constructive suggestions and criticism to offer whose non-constructive-criticism through better understanding might be dissipated.

The closer the feeling of relationship between the so-called "public" and the so-called "corporation," the better; and the greater the effort on the part of the company to eliminate all differences of viewpoint, the sooner will unity of feeling and harmony exist.

First, the gas-manager should convince or "sell himself" with a full appreciation of the fact that he and his company are both a part of the public; when doing so he should at once set about to likewise convince the public that the interests of both are one.

At least the so-called "public" and the so-called "corporation" should become hyphenated, if not actually amalgamated in purpose to each serve the other. If they become amalgamated in feeling would, of course, be the acme of excellence; to become hyphenated is the next best step. Let's try it out.

The public should certainly not be the servant of the corporation. There should be no servant and master relationship could there be if these two interests that have for many years been sadly divorced, were to become hyphenated or amalgamated in a harmony of spirit and purpose as the Golden Rule teaches.

Let us in 1922 seek diligently means whereby there may come about amalgamation of purpose each to his duty to the other. Thus shall we see the acme of success through the hearty united co-operation of these elements that exist in all of our gas-served cities, namely the public and the corporation. Let the gas industry "start something" in this direction.—The Editor.

Valor consists in the power of self-recovery.—Emerson.

Accident Prevention

Treating With Accidents to Meter Readers and Other Employees on Equipment Outside of the Company's Premises and Means of Prevention

By F. A. TOWNSEND

Chief Department, Denver Gas & Electric Company

IN handling the subject of "Accidents to Meter Readers and on Installation Outside the Company's Premises," a division into two parts seems logical.

The first department to come in contact with the gas that leaves the Company's premises, is the street or distribution department, which handles the installation of mains and services.

The next departments in order, are the fitting shop, meter reading departments, including the "turn on shut off men." The first division of the subject shows the main gang. The duties and the hazards commonly met by these men are as follows:

The gas mains of the present day are either of cast or steel pipe, the latter being the so-called wrought pipe in general use. Cast iron pipes are joined together with a bell and spigot joints, using case lead, lead or cement packing or with a universal joint, galvanized lead or red lead packing. Steel pipes are screwed, welded, flanged or joined by use of a coupling.

Several cases of injury have been cited where workmen have received injuries while making connections. I believe that most accidents of this nature could be avoided, if the pipe layer or man making service, would take ordinary precaution to see that the laborers are engaged in putting pipe in position.

By means of cross ropes from top of trench, that keep his hands and arms in the clear, while guiding pipe, no hands will meet. Burns occur in most cases from the careless handling of the ladle, as the metal is being poured at and/or in joint.

It should be taken to keep moisture, such as snow, etc., from the hot metal, and pipe layer should be fitted with proper fitting goggles.

Proper shoes should be used in choosing the type of a shoe he wears, but under no circumstances should a layer be allowed to wear a glove with gauntlet heel.

Accidents under this class of work have resulted from carelessness, and in not being properly guarded against cave-ins, guard against cave-ins and possible injury to workmen. In such work the

weight of the earth thrown out should be kept back at least two feet from the edge of trench, and sufficient cribbing or bracing used to insure safety.

Tight cribbing is usually unnecessary unless the trench is more than six feet in depth, or the soil very treacherous in nature. Generally either one or two sets of stringers between each bulk head, held parallel with trench walls by use of screw braces will suffice. The foreman should, however, use his discretion and avoid taking any chances.

After the trench has been completed for a sufficient distance, the work of pipe laying can commence. For sizes up to twelve inches, the use of a derrick is unnecessary, the length of pipe being rolled to the edge of the trench, and let in by use of ropes. In this operation two ropes are necessary, one at either end of pipe, a knot tied in one end of ropes that are laid at right angles to the trench beneath pipe. The men standing upon the stationary end of ropes push the pipe over the edge of trench, and laying out the other end of rope, over the top of pipe to allow it to slowly roll into trench.

The men handling these ropes should wear gloves to protect their hands from rope burns, splinters, etc. For pipes over twelve inches in size the use of a portable derrick is recommended. In this case the pipe should be shadded over the trench opening in as near the position it is to occupy as is possible. The weight of the pipe being lifted with the derrick, the shad should be removed and the pipe lowered.

Where the main is of small size or it is desired to supply new consumers, before the completion of the entire job, the connection to existing mains may be the first thing to be done, and the gas carried along as the pipe is laid. This policy is not to be recommended if it can be avoided, as there are hazards to every length of pipe laid in the possible failure of the lags and stoppers.

In lagging off or stopping of the mains temporarily there are two methods in use. The means of collapsible rubber bags that are inflated with air after being inserted in pipe, and by means of expansion, it gives experience teaches that each one has their particular advantages and disadvantages, while a combination of the two makes an ideal arrangement. The gas bag is liable to burst or become dislodged by excessive pressure, but is usually a gas tight arrangement, while the

A bad man's credit is as shifty as himself.—Pliny.

stopper when properly set will not become dislodged, but is not as a general rule, gas tight. It is recommended that on all mains six inches or over, both the bag and stopper be used. By this arrangement the advantage of one offset the disadvantage of the other.

Another precautionary measure taken by the Company, that I represent, is, that all pipe layers or workmen, connecting or tapping the main, where workmen are liable to be overcome with gas, shall wear some type of breathing device. At first we had the two hour, heavy type of a self-contained oxygen breathing device, but in our work the men complained they were too heavy to work in, also they were greatly hampered in getting in and out of trench.

In most instances we could not get the men to wear them, stating they would sooner take the chance of being "gassed." After this discovery was made, we adopted the lighter type, one-half hour breathing device, manufactured by the same company. We also have a hose arrangement, equipped with a positive face mask. Since the time of the adoption of the lighter devices, we have experienced no trouble with the men, and all wear them while making gas connections.

Falling or tripping, another hazard to be met in the laying of gas mains, is largely due, I believe, to the carelessness of injured or their fellow workers. All tools, such as bars, picks, shovels, etc. should, when workmen are through with them, be returned to tool box, and should at no time be left carelessly laying around trench where someone is liable to stumble over them, or knock them into the ditch.

Another feature in this class of work is the danger of falling pipe, the lengths should, if possible, be placed a safe distance away from opening of trench, or if this is not possible, wedges should be placed under the lengths to prevent rolling.

At the time of lowering pipe to its place at bottom of the trench, no one should be permitted in the trench until the pipe has been completely lowered, and then it is time for pipe layer, with assistance of men on top to place the pipe in position, ready for coupling. The foreman should at all times assign plenty of men to carry out the work, to prevent workmen receiving a strain from overlifting.

After the main has been connected up and before the gas is turned on in consumer's premises, or turned into the existing main systems, the air contained in the pipes must be thoroughly expelled. In small mains this may be safely and thoroughly done by removing plug at the extreme end of the new system. In a large installation this becomes of vital importance, and of extremely hazardous nature.

In purging large main installations a stand pipe should be arranged in the holes to be used for "gassing" long enough to discharge over the heads of pedestrians, a controlling valve should be conveniently arranged in the stand pipes, and a fine mesh gauze inserted near the top of stand pipe, all lights and flames should be kept

away, and in no case should an attempt be made to light or burn the escaping mixture.

When a consumer makes application for gas service, in either a new or old building, on streets where the gas main has been laid for some time, the Company employs several special crews (consisting of three to ten men) in this work. In many cases the men are ignorant and of foreign birth, consequently more liable to accidents, and the foreman must constantly be on the job, reminding and talking safety to the men.

Tapping the service mains is similar in this work to that in the new construction, and the same precaution should be taken to protect the worker.

Curb valves are required by city fire ordinances on all services larger than two inches. We use the gate type valve, which varies in weight from seven to forty pounds, according to size of service on which it is to be installed, careful handling at all times to prevent dropping valves in trench striking the workman below, also the same precaution should be taken when installing to prevent worker from being "gassed."

While drilling through cellar or basement walls, the worker should be furnished with proper fitting goggles, and care should be taken to see that hand tools are in proper condition; that drills have no mushroomed heads, and hammers do not have cracked or broken handles.

The second division of the subject, while involving several departments of the Company, has to deal with the interior of the consumer's premises. The common hazards are as follows:

Meters and governors are installed by the Gas Fitting Department, after the service has been installed by the Distribution Department on the consumer's premises.

While this Company does no piping of buildings for light, and feels that its liability ceases at the meter, we believe that the consumers should profit by our experience, and, therefore, insist on two inspections on all work done by outside plumbers or fitters. One inspection to be made before the piping is concealed and the last and final inspection to be made after the pipes have been plastered over. The former is to ascertain if the piping has been laid in accordance with the rules and regulations of the Company, governing size of pipe and methods of installation, while the latter is to ascertain if the job is tight. At each inspection the piping should be subject to air pressure.

Upon setting meters or appliances, the fitters should take precaution to see that all tools are in good condition, such as wrenches with bad handles, jaw sprung or worn smooth from use. Particular stress should be laid on the subjects of proper objects on which to stand, while working on meters or appliances where condition demands. A number of injuries have been recorded caused either from wrench slipping or breaking, due to defective jaws or handles, or the object on which workman was standing giving away, and allowing him to fall.

The fitter should instruct the consumer in the use of appliances he has installed on their premises, the oven

Human life is more governed by fortune than by reason. Hume.

range should receive a goodly share of the primary instruction. The consumer should be urged to always open both doors before lighting, and be positive that gas is burning before closing them. Instruction has been given this fact in late years by the factory, so that on most modern ranges an oven door is a practical impossibility, but an impression of refusal without creating fear is the thing to be used.

Water heaters should be equipped with a flue or pipe, connected direct to chimney, or some other safe place whereby the fumes will be carried off and expelled into the air outside the building. No

heater should ever be installed in a room of less than 1500 cubical feet air capacity, unless such room is supplied with a permanently open ventilator of not less than 13x14 inches dimensions. In no case should a water heater be permitted to be installed in a bath or bedroom.

The permanent abolishment of the use of rubber tubing and metallic tubing with rubber ends, or in fact, the abolishment of all rubber connections for gas appliances, is something to be very much desired. There is no reason why all hot plates or other small appliances cannot be connected with pipe and fittings, while the more or less temporarily connected appliance, such as room heaters, etc., should be connected with metallic tubing with a ground joint union at either end. The better life and property has been jeopardized by gas connections than perhaps any one thing pertaining to the gas industry.

When a hose pulls apart, becomes leaky, the ends split or are so large that they fall off of the hose nipple or when someone stumbles over the tubing or steps on it, all result in the same thing, escapement of gas and consequent hazard.

While the work of a fitter is not particularly hazardous, it may become dangerously so at times. He is working with a gas, that under favorable conditions is dangerous, but which may, as a result of accident or competent handling, become a deadly menace.

Workmen should be forbidden to use open flames in tracing for leaks. A number of accidents which occur each year, from naked flames being employed in tracing of leaks, demonstrate a necessity for an absolute prohibition.

When there is a strong odor of gas about the premises and a long leak, the first thing to be done is to open

all doors and windows to ventilate the rooms where the leak is detected. Then examine all fixtures and appliances in the rooms and all exposed piping. Make examination either by smelling along fixtures and pipe or by holding fingers over them and smelling fingers, or by using the sniffing device made by escaping gas. If the above methods fail to locate the leak, apply the soap and water, by means of a soft brush, to exposed piping and fixtures, particularly to each fitting or cock, and along pipe seams, watching

closely for bubbles that will appear where a leak of any magnitude exists.

Meter reading, turn on or shut off of meters, is handled by the Meter Reading Department. The largest number of accidents occurring to members of this department is caused by forces outside the Company's premises, over which we have no control, such as drug stores, power vehicles and collisions. Meter readers should be furnished with an electric pocket flash light, and the practice of using matches while reading meters should be forbidden. One of the greatest sources of evil we have to contend with from the meter reader is his effort to locate a gas leak around meter when requested or told of leak by the consumer. This is a very dangerous practice, as in most cases the man is ignorant of the gas business or the dangers attendant either from fire or explosions. All men upon entering any dark hall or cellarway should first make certain that passageway to the meter is unobstructed, and that no broken floors or treads exist on stairs, that boxes or other material lying on the floor cannot be stumbled over, causing a fall and possible injury.

As a further precaution to our meter readers at any house where there is a vicious dog, dangerous stairways, or dark or dangerous basements, we have this information printed on the meter book, so if a new man goes there he knows what the danger is before he enters the house. This costs but very little time and expense and prevents many accidents of this nature.

As a further incentive to keep the foremen of the various departments interested in safety, we have installed a safety competition, based on lost time accidents. Each competition extends over a period of six months. The standings of the various departments are posted on all safety bulletin boards through the various plants on the first of each month. When this competition was first started, some two years ago, the departments were grouped in two heads, each having its handicap, based on the frequency and severity rate of the departments for the two years past. To the winning department the Company presented a silver trophy cup, which, having been won three times in succession, it would remain permanently in the department, and \$100.00 cash bonus to the foreman of the winning department. While this plan worked well, it was decided that a higher degree of efficiency could be obtained if the various departments could be grouped under two classes, according to their employment hazard.

We now award \$50.00 to the foreman of the department having the highest standing in each of the above groups, at the end of the six months competition. Also a trophy cup is presented to each department, and if won three consecutive times, remains permanently in that department. Some time ago we began and a suggestion and suggestion department was organized, in the heads of the different departments. Meetings are held once a month. We have installed a suggestion box in each plant throughout the various plants and also suggestion boxes, and all the workmen are encouraged to offer

To persevere in one's duty and be silent is the best answer to calumny.—Washington.

suggestions regarding their work, whereby greater safety and efficiency may be obtained. These suggestions are collected a few days before our meeting and are carefully looked over and numbered, and then brought before the meeting for discussion. We also have a committee of four who afterward go over the suggestions and award three capital prizes, namely, first, \$5.00; second, \$3.00 and third, \$2.00. Also each man receives one dollar for each suggestion submitted by him.

In conclusion it might be well to mention a few statistics of the work carried on by this Company for the year 1919, together with the number and nature of accidents occurring throughout the various operations in the several above described departments.

In the Gas Distribution Department, a total of 20,992 feet of new main was laid, making at the end of the year a total of 2,108,556 feet of main (all sizes) in use in the city. Also this department connected or put in gas services on 835 new installations, making a total of 42,858 services or gas connections in use in the city, with but two accidents, both from gas poisoning and with the loss of only three days' time; and these two accidents were caused by the men taking a chance. They had safety devices but did not use them.

In the Gas Fitting Department, a total of 2,561 meters were connected, while 290 were disconnected, leaving a balance of 49,763 meters in service (not including the changes of meters due to leaks and other causes, which were also handled by this department); also 2,607, all types of appliances, were set, and 24 disconnected, making a total of 86,468 appliances in service throughout the city. We feel that this department had an unusual record, insofar as they did not have a single accident which resulted in the loss of time to workmen, during the year, a record that they are so far this year in a fair way to maintain.

In the Meter Reading Department, an average of 49,763 meters were in service at the end of the year on the consumers' premises, employing an average of twenty-five men per month. In this department occurred 32 accidents, with a loss of 79 days. Most of these accidents were due to animals or power vehicles over which we have no control.

The writer is indebted to Mr. Geo. Wherle, for excerpts from his book, "American Gas Practice." —By courtesy National Safety Congress.

K. & G. HAS NEW YORK OFFICE

The Kansas & Gulf Company has opened a branch office at 111 Broadway, New York City, for the transaction of its eastern business.

The Kansas & Gulf Company operates as a producer in Arkansas, Kansas, Oklahoma and Texas. Its normal daily production of approximately 5,500 barrels is expected to be increased by the completion of three new wells now drilling in the Fox Bush Field south of El Dorado, Kansas.

Executive offices of the company are located in 332 South Michigan Avenue, Chicago. The general offices are in the Petroleum Building, Tulsa, Oklahoma.

THINGS TO REMEMBER AND SOME OF THEM TO TEACH TO THE PUBLIC

GAS wastage means shortening of the life of natural gas.

A million dollars worth of gas is wasted every day, in homes.

A large percentage of population is dependent upon natural gas, hence its continuance important.

Reduction of pressure, an important aid in reducing gas-leakage.

Quality of service if affected at all by reasonable reductions in pressure, is improved.

Greater uniformity of results are obtainable by reasonable reductions in pressure.

Combustion of natural gas is slow, and high gas-pressure cannot be utilized.

Correct position of burners means lower gas-bills and better service.

It is easier for the company to give good service with low pressure.

Many solid top stoves with low set burners give poor service.

Wastes that ought to be prohibited:

(a) Improper adjustment of appliances, resulting in imperfect combustion.

(b) Low burners: that is, burners more than one and one-quarter inches away from the cooking vessel on cook stoves.

(c) Solid tops on cook stoves. Grid tops or skeleton lids only should be used.

(d) Use of gas in coal furnaces and stoves. Especially built gas-heating appliances, giving an efficiency of at least 75 per cent should be used.

(e) No hot-water heater should be used that gives an efficiency of less than 75 per cent.

(f) No tank heater—that is, tank with burner underneath—should be used without an outer jacket and flue connection.

(g) All daylight burning of lamps ought to be prohibited.

The prohibition of the foregoing wasteful uses of natural gas would—

(a) Greatly improve the quality of the service.

(b) Immediately convert low-pressure conditions into usable service for cooking.

(c) Cut down the needed consumption during the cold weather period, where the demand is now greater than the available supply, so as in effect to make more gas available for all.

(d) Add 15 to 20 years to the period that natural gas will be available for domestic use.

(e) Because of the greatly increased efficiencies obtained, even with decidedly higher prices per 1,000 cubic feet, would permit the domestic consumer to get the same service without a greater annual outlay of money.

(f) Permit the many small towns that are too small for the introduction of manufactured gas to have gas service for a much longer period.

People would meet with fewer disappointments if they didn't expect more than they deserve.

Automobile Safety Lessons

Lesson Outline No. 11

A COMMERCIAL DESIGN

Modern laws on this subject now require that a 30 minutes after sunset until 30 minutes before sunrise (and in some states, no motor vehicle will be operated unless it has sufficient lights, so that it is operated as to render the highway safe to the public.

The head lights should enable the driver to distinguish a person, vehicle or substantial object past 200 feet ahead. Dangerous glare or dazzle will be avoided.

12-11-54

- a. Two headlights when in motion, one on each side. Both lights of equal power. Headlights to be white or tinted, never red.
- b. One or two headlights when standing still. Lights should be visible at a distance of at least 500 feet.

The tail light and that is visible at a distance of at least 500 feet. Light should be displayed whether car is in motion or standing. Tail light should be at left or center of car and illuminate number plate with a white light.

The Illuminating Engineering Society after considerable investigation and experimentation has formulated the following table of foot-candle intensities. It is a conservative table, all dangerous and dangerous-to-well-lighted intensities. Tests can be made with a portable photometer where readings are not too exact. These readings are representative only. In the table below, by applying the rule of thumb, you can reach the same result as the table. For example, if you are at a distance of 10 feet from a 100 candle power lamp, the reading is 1 foot-candle. If you are 20 feet from the lamp, the reading is 25 percent of the 10 feet reading, or 100 feet indicates 25 percent of the 10 feet reading, or 100 feet indicates 25 percent of 1 foot-candle, or .25 foot-candle.

[illegible]

5. Important points are
- a. Equip headlights with proper device to make their lights conform to the above table
 - b. Install lamps whose candle power corresponds to the device used
 - c. Focus lamps in reflectors according to requirements of device used
 - d. Adjust headlights according to requirements of device used

(6) Many of the patented devices now on the market do not necessarily make the headlight intensities conform to the above table. When buying such devices owners should ask for a guaranty. This should state the size of lamp to be used, the tilt of the headlight, axial adjustment required, and instructions how to secure these adjustments. A home-made arrangement can be devised to give satisfactory results if lens is properly covered, treated or painted, not red. If light is at the back of lens, paint upper half of lens ahead of the light rays or so, to paint lower half of lens.

7. Different lenses require different sizes of bulbs. Headlight bulbs in some states are not allowed to exceed a rating of 24 candle power; in other states the maximum is 32 candle power.

8. The bulb in some headlight can be moved slightly backward or forward by adjusting a small set screw. To determine which way the light shines, go a wall 25 feet away. Move bulb backward and forward until the circle of light makes its smallest possible diameter. The rays of the head light diverge call for this adjustment. A few inches of adjustment there be for the light to be the same as the original adjustment. The other way to go, or adjust to make the light shine in a different direction.

1. The following information is provided for the year ended 31 December 2014:

[illegible]

man who is not ashamed of himself need not be ashamed of his early condition.—Webster

11. Always carry a spare bulb for your headlights, the same as you do a spare tire.

12. Headlight lens may loosen and rotate in the frame; inspect it frequently, adjust and tighten it if necessary.

13. Reflectors need careful attention.

- a. Replace dented reflectors.
- b. Replace or replate tarnished or rusted reflectors.
- c. Finger prints mar surface of reflector; use soft cloth when handling.
- d. When wiping reflector, use soft cloth and wipe from center outward to rim, not round and round.

14. If lens breaks, tie a paper or cloth over headlight until lens can be replaced.

(Complete sets of twelve copies of the "Safety Bulletins and Safety Lessons for Automobile Drivers can be had at cost by addressing the National Safety Council.)

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PRIZE WRINKLES

THE Wrinkle Department of the Natural Gas Association of America has become an established affair. However, the upbuilding of this Department has been the outcome of hard, persistent work, the foundation and the corner-stone having been laid long since by men who earlier gave much time and patience to the work without remuneration other than the plaudits, for the time being, of those who were sufficiently thoughtful to express gratitude for the work done.

The present editors have held over for 1922, their good work having shown them well qualified as persistent workers to gather these valuable features from throughout the field.

THE NATURAL GAS INDUSTRY magazine for years has rendered unqualified service to the Association and to the editors of the Wrinkle Department, it being the only publication during that building period, that gave space to the promoting of these interests. The space given was in no wise stinted; therefore, to the editors of that department who have gone before, and to the NATURAL GAS INDUSTRY magazine much credit is due.

Now, of the present, we would simply say, the same service on the part of the NATURAL GAS INDUSTRY magazine, is at the Association's disposal.

The prizes that were offered for certain of the best "Wrinkles" presented at the convention of 1921 were allotted by the committee as follows:

OFFICE WRINKLES

First Prize—\$25.00 to William Taylor, The Manufacturers' Light & Heat Company, Pittsburgh, Pa. Wrinkle No. 15—"A condensed record of average gas calculated from the first minute raise in pressure after being shut in and summary results of operations."

Second Prize—\$10.00 to G. R. Huggins, East Ohio Co., Cleveland, Ohio, for Wrinkle No. 2—"Gas drawing table."

Third Prize—\$5.00 to R. S. Cheatham, Fort Worth Company, Fort Worth, Texas, for Wrinkle No. 1—"Make friends of your customers by educating."

TRANSMISSION WRINKLES

First Prize—\$25.00 to T. H. Kerr, The Ohio Fuel Company, Columbus, Ohio, for Wrinkle No. 1—"Method for using two locks so each will unfuse door."

Second Prize—\$10.00 to David R. Woodyard, Natural Gas and Fuel Co., Chillicothe, Ohio, for Wrinkle No. 7—"Inspection method for C. Fulton regulators."

Third Prize—\$5.00 to Engineering Department, Ohio Gas Co., Cleveland, Ohio, for Wrinkle No. 1—"Support for railroad tracks."

PRODUCTION WRINKLES

First Prize—\$25.00 to W. A. Hovis, United Natural Gas Co., Clairmont, Pa., for Wrinkle No. 9—"Machine with two pole derrick used for pulling and cleaning out wells."

Second Prize—\$10.00 to B. A. Pyle, United Natural Gas Co., Petrolia, Pa., for Wrinkle No. 3—"Finding casing started when unscrewed and to or of hole."

AGREEMENT ON OPERATION UNDER PATENTS

THE Standard Oil Company (Indiana), owning the Burton, Humphreys, Clark and patent rights, and The Texas Company, of the Adams, Holmes-Manley and other patent rights, all pertaining to the pressure cracking in connection with the manufacture of gasoline and petroleum products, have effected an arrangement by which each has the right to operate under the patents, and whereby, under an agreed division of royalties, either may license others to operate under or all of said patents. The granting of licenses to use these patents should result in benefit to the industry as a whole, and also increase the supply of petroleum products essential for the use of internal combustion engines.

Politeness has been well defined as benevolence in small things.—Macauley.

Natural Gasoline as an Essential Constituent of a Good Motor Fuel

THE UNIVERSITY OF CHICAGO PRESS
5 EAST COLUMBIA STREET
CHICAGO, ILL. 60607

They also claim that the United States has been unable to establish a credible and effective presence in the region, and that the United States has been unable to establish a credible and effective presence in the region.

The second important point in the relationship of natural gasoline to motor fuel is that when introduced into the refinery during the process of manufacturing motor fuels it actually increases the quantity of gasoline produced from a barrel of crude. This is a well established fact and does not admit of successful denial. Natural gasoline enables the refiners to dig deeper into the crude to get his base which, when mingled in the refining process with natural gasoline, becomes a superior motor fuel. It is undoubtedly true that this increase is greater with some grades of crude than with others, and it is probable, too, that the advantages in this direction are greater with the heavier than with the lighter crudes, although in fact it would look as though in the proper hands superior results would be accomplished. The greatest advantage, however, with these crudes is being relatively cheap. The refiners have made this available to the automobile and other large quantities of heavy motor fuels, and it is available to the use of the same way. The benefit of the use of natural gasoline appears to be in increasing the refining facilities and in supplying motor fuels of a higher and less volatile character, and matters which place in the realm of high speed motor fuels. The refiners seem to emphasize that natural gasoline will not only increase the quantity of base motor fuel produced, and

Politeness is the art of choosing among one's real thoughts —Stevens.

all grades of crude, irrespective of the processes used during the refining operation.

In a large eastern refinery, running mixed Pennsylvania, Oklahoma and Mexican crudes, the increase due to the use of natural gasoline was, over a definite period of observation, six per cent of the crude or thirty per cent of the gasoline yield. The amount of natural gasoline was between ten and fifteen per cent.

The third point I wish to bring out does not have to do with the improvement in quality of motor fuel nor with the increase of quantity from a given volume of crude, but pertains to the future supply of natural gasoline available to help the motor fuel situation, both qualitatively and quantitatively. The problem is one of a relatively diminishing supply. As the demand for motor fuel increases, and the quantity is increased to satisfy this demand, there will be a diminishing quantity of natural gasoline to maintain either the qualitative or quantitative function which it is now fulfilling.

When the natural gasoline industry began to develop in a practical way in the United States in about the year 1910, and in a semi-practical way several years later, there existed oil fields which had started producing crude in the early history of development, probably as early as the '70s, and other fields which had been discovered at successively later periods. By 1918 all of these older fields had been worked over, so that during the period of active expansion of natural gasoline manufacturing from 1914 to 1918 there was a very rapid increase in the amount of natural gasoline manufactured in the United States, with the Mid-Continent fields of Kansas, Oklahoma and Texas producing more than 70 per cent of the total.

The time, therefore, came when only new fields of crude production were available as a source of natural gasoline, and the high rate of increase occurring in 1916, 1917 and 1918 fell off to a very marked extent.

Perhaps twenty per cent of the total natural gasoline produced in the United States today is derived from the dry natural gas being transported through natural gas pipe-line systems from gas fields to the centres of natural gas distribution which are the cities of Pittsburgh, Cleveland, Cincinnati, Kansas City, Dallas and others. It is a known fact that the supplies of natural gas being distributed to those cities is on the decline. Whatever that rate of decline may be, there will be a corresponding rate of decline in the amount of natural gasoline produced from this general source.

Aside from the new fields which may be developed in the future, there is only one additional source of supply of natural gasoline. This is the fields from which the casing-head gas yields a gasoline content so small that under the present economic conditions it is not practicable to utilize it for natural gasoline extraction. If the economic situation should change and it should become profitable through the development or improvement of methods, it would be possible to a small extent to increase the natural gasoline production. There is, however, relatively small hope of this prospect being realized.

It is a notable fact that only the high gravity crude producing areas are the sources of considerable quantities of natural gasoline and unless an economic change takes place, this condition will continue to exist and only the fields developed in the future which produce relatively high gravity crudes will be the new future sources of natural gasoline recovery.

The conclusion must, therefore, be that, with gasoline production from dry gas declining, with all the older fields worked over and now producing larger quantities than they can be expected to produce in the future, and with only the new high gravity oil fields to be looked to for new sources of production, there will be a constantly widening gap between the supply of natural gasoline and the demand created by both the qualitative and quantitative advantages which it carries with it when scientifically used in connection with the manufacture of motor fuels.

This will be one of the problems of the future, but I am confident that the ingenuity of the engineers both of the refining and automotive industries will be able to solve it.

—By courtesy of the Petroleum Institute.

PRYING OUT NEWS

WORD comes to us from the U. G. I. in Philadelphia, that the *Public Ledger* of that city through its managing editor, recently applied for data regarding gas matters, urging that the newspapers be kept in closer touch with the gas interests and what they are doing. That again brings to the fore that which has been urged at various gas association meetings, namely, the need for constant, unremitting and, above all things, honest, straightforward statements made to local newspapers, covering the doings, difficulties, and purposes of local gas companies.

Again and again have the gas-men been told by men of experience in the magazine and newspaper fields, that what the newspapers want is not "bunk" but facts, and what the newspapers also want is to have local interests like the gas company voluntarily supply not "puffs", but straightforward legitimate news.

The newspaper has been looked upon by utilities as a "knocker." Is it surprising that such should be the case, in view of the fact that the newspapers have not been taken into the confidence of the gas company?

What the newspapers are after is legitimate news, and if those interested, namely, the gas managers do not supply such regarding their institutions their intentions, and their endeavors, garbled news formed of what the reporter or the public imagines to be, or surmises to be, the purpose, the aim, and the intent of the gas company, will surely find its way into the public press.

It is certainly a sad commentary upon the conduct of gas interests, when a newspaper managing editor should feel it necessary to solicit news and information from gas sources. A word to the wise should be sufficient.

Set not thyself to attain much rest, but much patience. Benham.

Loss By Leakage

**Slackness in Carrying Out Leakage-Curtailment Measures Recommended
by U. S. Government Largely Responsible for Present
Tremendous Loss of Natural Gas**

IN recounting the findings by Samuel S. Wyer of Columbus, Ohio, based on his investigation of the wastage of natural gas in 1920 in percentage contract distributing plants in northern Texas supplied by the Lone Star Gas Company, the same based on town border meter tests of the U. S. Bureau of Standards among other things, reasons are given why natural gas is harder to hold than is manufactured gas. These reasons are as follows:

Natural gas, not containing condensable components, in a fairly pure state, does not tend to stop up cracks or pinholes through which dry gas, like natural gas, will go, but which a wet gas, like manufactured gas, would very shortly fill up.

Natural gas distributing pressures have been maintained much higher than those used for manufactured gas. This, of course, has materially increased the leakage.

Natural gas being dry and having a marked affinity for moisture, when it does get out of the pipe immediately absorbs moisture from the soil, making the soil dry and powdery, therefore, increasing the ease with which the natural gas can quickly work its way out to the surface, whereas with manufactured gas the tendency would be to make the soil wetter and, therefore, the soil would offer a greater resistance to the gas flow and check the leakage tendency.

Looking upon the legal standard for gas leakage, the following statement is made:

The most exhaustive judicial investigation that has ever been made as to the gas leakage operating conditions was made by Judge B. O. R. of the United States District Court in connection with the Kansas Natural Gas Company distributing plants. The evidence introduced in this case showed clearly that in good manufactured gas plants the leakage would be held down to an annual average of 100 M. per cubic foot of gas per year, or three and a half per cent.

Having the above facts in mind, it is evident that the existing conditions of natural gas operating plants are grossly excessive. Such excessive leakage of natural gas has led to 100 M. per cubic foot of gas per year, or three and a half per cent, as a standard. It is evident that a natural gas distributing leakage of 20 M. per cubic foot of gas per year, or one and a half per cent, would be a very reasonable standard.

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The standard of 200,000 cubic feet per mile of three inch main per annum is a reasonable and attainable standard according to testimony given upon the hearing by expert engineers of high standing both those called on behalf of the distributing companies and those called on behalf of the Court of Industrial Relations. It may be true that a more wasteful standard would result in better financial results to the distributing companies, and it may also be true that if the matter were left to the distributing companies themselves they would continue a more wasteful standard.

This change in the standard of leakage is for the purpose of conservation and the consumers are as a matter of fact more interested in conservation than the distributing companies. When natural gas is exhausted the companies will be distributing manufactured gas and will be getting presumably a reasonable return for so doing, so that the change will be of comparatively little moment to them, but when natural gas is exhausted the consumers will suffer a distinct loss which will never be recovered. The consumers, therefore, are vitally interested in conserving the natural gas as far as possible. The saving is untimely for their benefit.

Permissible Leakage in the Distributing Plants

In the cases of the following the legal standard laid down in the preceding section, the permissible leakage in M. per cubic foot per annum in various distributing groups would be:

	M. cu. ft.
Natural Gas Company	90,000
Dallas Gas Company	100,000
East West Gas Company	100,000
Lawrence Gas & Electric Company	100,000

Total 390,000

Based upon the following gas company estimates, annual leakage of the gas companies is three and a half per cent, or 100 M. per cubic foot of gas per year.

Lawrence Gas & Electric Company, 100,000 M. cu. ft.
Dallas Gas Company, 100,000 M. cu. ft.

Based upon the following gas company estimates, annual leakage of the gas companies is three and a half per cent, or 100 M. per cubic foot of gas per year.

Lawrence Gas & Electric Company, 100,000 M. cu. ft.
Dallas Gas Company, 100,000 M. cu. ft.

Opportunity makes us known to others, but more to ourselves. La Rochefoucauld.

The natural gas wasted has a higher heating value than the manufactured gas and the above excessive waste would be equivalent in manufactured gas to.....4,000,000

The average price of manufactured gas in the State of Texas is \$1.30 per "M." The money value of the excessive natural gas waste in these distributing plants is, therefore, \$5,200,000.

Referring to percentage contracts, the statement is made that such are "vicious."

"The vicious features of the percentage contracts, used for selling gas to certain distributing companies, are not in the fact that the gas is sold by the local distributing company on a mere percentage of the total receipts through the ultimate consumer's meter, but in the fact that the Lone Star Gas Company must—

First, stand all of the leakage of the local distributing plants, and

Secondly, that this places no incentive whatever on the local distributing companies to keep their plants tight.

This percentage contract situation is the major reason for the deplorable leakage conditions that now exist in many of your distributing plants selling natural gas on a percentage basis. That is, because of these percentage contracts a premium is actually placed on inefficient operation, and the local distributing plant is so operated as to actually stimulate a wanton waste of a limited natural resource, and in so doing not only greatly injures the public but materially shortens the serving time of the Lone Star Gas Company.

'Where percentage contracts are in use, the following invariably will happen:

(a) Collections by the local distributing company will not be as carefully looked after as when the local distributing company is entirely responsible for and the sole loser of unpaid bills.

(b) The waste in leakage will always be much greater than where there is a definite responsibility. Most natural gas distributors fail to appreciate that constant vigilance is the price of a tight natural gas plant, and if they are not responsible for the tightness of their plant little or no vigilance will be exercised in curtailing leakage.

Much has been said about the sacredness of contracts, without appreciating that there can be no vested right to do a moral wrong. These percentage contracts are not private contracts, but are public contracts in which the public has a vital interest, and when one recklessly, defiantly, persistently and continuously wastes natural gas, and boldly declares his purpose to continue to do so, he ought not to complain of being branded as the enemy of mankind.'

To hold that this natural gas waste situation cannot be corrected—because of contracts—is to hold that two utilities can barter away their plain public utility obligations to the public. Such a condition cannot be tolerated by society. The broad public interest in the use and conservation of natural resources has become more

important than individual private interests. The foolish waste of one's substance, especially if that substance is a natural resource like natural gas, is one in which the public itself is directly concerned.

The fire and explosion hazards existing in the towns because of this excessive leakage of gas would alone justify intervention on the part of the public.

The objectionable percentage contracts ought, therefore, to be abrogated at once. If you cannot agree with the distributing companies and have an immediate abrogation and rational readjustment, then the State should step in and declare that the contracts are against public policy and should void them in the interest of the public."

It is regrettable that the United States Government recommendations for waste-gas-curtailment are not carried out, for if they were, far better conditions would at once be resultant. The report says of this matter:

"This deplorable distributing plant waste situation is not merely a recent development. As early as 1918 the U. S. Fuel Administration was in possession of enough information to determine the magnitude of the then abnormal leakage situation. The distributing companies were notified of this condition, but did not carry out the recommendations.

The National Committee on Natural Gas Conservation, in the resolutions adopted at the U. S. Bureau of Mines in Washington, D. C., June 11, 1920, called particular attention to the necessity of use of measuring devices, that percentage contracts for retailing gas should be against public policy and that distributing pressures should be lower and more uniform. The U. S. Bureau of Mines, in November, 1920, urged the State of Texas and its public officials to carry out these recommendations in the interest of the public, but nothing has been done. The U. S. Bureau of Standards, on July 20, 1921, issued a statement on "How to Get Better Service With Less Natural Gas in Domestic Gas Appliances" and the distributing companies were urged not only to carry out these recommendations, but to get this governmental information to their consumers. This also has not been done. This information would be of great value to the gas consuming public in showing how to cope with the inevitable low gas pressure situation which must be faced during the cold weather this winter, and would bring out that usable service can be secured with even extremely low pressures if gas is properly used."

The report states that leakage conditions were found exceptionally bad in certain instances. "At one point 15 joints of pipe had been removed from an old line, and each joint was full of holes. Several of these joints contained more than twenty-five holes apiece, the holes indicating grossly wasteful operating conditions, flames from six inches to three feet long could be secured by lighting the escaping gas that was coming up through the undisturbed soil, and through bar holes."

A report of Hon. Wilbur F. Booth, Judge, District Court of the United States, makes the following statement regarding the effect of pressure on gas leakage:

One's piety is best displayed in his pursuits.—Alcott.

The quantity of leakage through a given opening under different pressure conditions, will vary directly as the square roots of the pressures. That is, the leakage tendencies at 4 oz. and 1 oz. will be as the square root of 4 is to the square root of 1 or as 2 is to 1. That is, mathematically the leakage at 1 oz. will be only one half that of 4 oz. However, as natural gas pipes are buried under the ground the soil resistances at low pressures, in the neighborhood of 2 oz. and lower will be so great as to seriously impede the flow of escaping gas, and for this reason the leakage at 1 oz. will be less than the mathematical relationship.

The pressure carried in the distributing plants are too high for good service or for efficient leakage operation. The lowering of the pressure to about 2 oz. in the distributing plants would not only curtail the leakage but would materially improve the quality of the service.

Looking upon the method of reporting the leakage of natural gas in a gas distributing plant the statement is made that

"The leakage should be reported in terms of 1,000 cubic feet of gas lost per annum per mile equivalent three inch pipe. Sizes other than three-inch to be converted to three inch by multiplying by the ratio of the respective diameters, that is one mile of six inch would be equivalent to two miles of three inch and one mile of one and one half inch would be equivalent to one-half mile of three inch."

If one were able to correctly multiply present losses in terms of 1,000 cubic feet per mile of three inch pipe basis, the figures would be astounding, and, no doubt, some action would be taken to see that present laws are enforced. How much better would it be, were the conscience of the industry at large listened to.

NATURAL GAS APPLIANCES

SINCE the consuming of natural gas is rapidly departing from the stage of excessive wastefulness, every effort should be made on the part of the gas man to fully advise himself both how efficiency may be increased and wastefulness diminished.

No time should be lost on the part of gas interests in accomplishing the foregoing, and the gas man having set himself up to the firm with knowledge and appreciation of the situation, should convey to the public what he himself has learned.

The gas man should himself become convinced that a reduction in pressure is desirable. He should then proceed to educate his public along the same lines. There should certainly be no objection to reducing the pressure to two ounces, 1.5 inches, or even less, since every experiment and demonstration shows that the quality of service is not thereby impaired but, on the contrary, very much improved, providing of course proper adjustments

in appliances are made at the time the pressure is reduced.

In statements made by the Bureau of Standards the following appears:

A great deal of misconception exists in the minds of a large number of consumers of natural gas regarding the quality of the service and utilization efficiency of natural gas when supplied under different pressures. From the domestic consumers standpoint there should be absolutely no objection to a reduction in pressure to two ounces, 1.5 inches, or even less, since every experiment and demonstration shows that the quality of service is not thereby impaired but, on the contrary, very much improved, if proper adjustments in appliances are made at the time that the pressure is reduced.

It is true that with many natural gas appliances, as they are at present adjusted with the burner two and one half inches or more from the utensils, which makes it necessary to burn a large quantity of gas to get good service, a high pressure is necessary to inject enough primary air into the burner to prevent a smoky luminous flame which blackens the utensils. Investigations made by the Ohio State University, Department of Agriculture, Bureau of Mines, and Bureau of Standards show that when burners are two and one half inches from the utensil they are very inefficient and therefore wasteful. The cost of raising the burners is but a small sum compared to the saving that can be accomplished. It should not be argued that high gas pressure and low set burners should be continued merely to enable the careless user to have service.

The same statements embrace the following relating to the combustion of natural gas:

The combustion of natural gas is very much slower than that of artificial gas, and it has been noticed by every user of natural gas that when the gas pressure is high there is a tendency for the flames to leave the ports of the burner. This is especially true if the air shutter is left open. With an average burner operated at four ounces, 2.0 inches, pressure, it is necessary to have the air shutter of the burner practically closed. If the pressure is reduced to two ounces, 1.5 inches, the size of the gas orifice must be slightly increased to give the same gas rate, and the air shutter must be opened a little wider to secure a good flame. We have, therefore, in the case of two burners, one operated at four ounces and the other at two ounces pressure, the same volume of gas entering the burner, the same volume of air leaving the burner, resulting in exactly the same appearance of flame in both cases. The efficiency of the burner should be essentially the same, which has been shown by a great many utilization tests in the home. That rapid cooking is wasteful can be readily demonstrated, and since it is possible to cook with less gas, it is evident that the gas rate can be reduced to a considerable extent, and there can be no objection to reducing it at a higher pressure.

It is quite possible that many statements regarding the correct pressure for domestic gas service

Fortune is not content to do a man one ill turn. Bacon.

"If the standard size natural-gas burners are placed properly (within about an inch of the utensil) a consumption of about six cubic feet per hour is sufficient to give the speed required for all ordinary cooking operations and much gas will be saved that otherwise would be wasted. With this gas rate almost any burner can be easily adjusted to burn gas with a good flame with pressures even lower than two ounces. With the present low-set natural gas burners the service is greatly impaired if the pressure drops from four to two ounces, assuming that the burner was designed and adjusted for four ounces pressure. The advantage of being able to operate a raised burner designed for two ounces pressure is that the service is not appreciably affected until the pressure drops below one ounce."

One desiring the Bureau's complete circular treating upon these matters should send to the Bureau of Standards for Circular No. 116, while those wishing further to advise themselves should apply to the Bureau of Mines for technical paper 257, entitled, "Waste and Correct Use of Natural Gas in the Home."

ZANESVILLE, A STAR

THE people of Zanesville, Ohio, have shown themselves head and shoulders above the peoples in many another city who have failed to evince a breadth of vision sufficient to grasp the fact that where a gas company cannot successfully operate under a current rate, that an advance in rate is to the direct benefit of the public of the city, even though it be likewise of benefit to the corporation. Zanesville, Ohio, gave a majority of 2,494 when voting upon an ordinance to raise the rate for gas per thousand cubic feet, gas supplied by the Ohio Fuel Supply Company.

A municipal election was held in November, and opportunity was grasped at that time to place before the citizens of Zanesville, the question shall the rate for gas be increased 10 cents per thousand cubic feet. Instead of a landslide of "no's" there was a landslide in exactly the opposite direction.

By many it was not supposed possible to have the ordinance ratified; by others it was thought that there might be a small majority, but when it was announced that 2,494 represented the majority in favor of the ordinance, even a daily newspaper of the city took advantage of the opportunity through its columns to congratulate the Chamber of Commerce, which did excellent work looking to the saving of natural gas for Zanesville, through an ordinance that should pay the gas company sufficiently well to make a supply a certainty.

The plan of the Chamber of Commerce was the establishing of an open forum, thus it was that the matter was fully and well discussed prior to election day. The thought comes to us,—would it not be well whether the gas-rate were or were not to be changed, to induce the Chamber of Commerce in many of our cities, to institute a forum for the discussion of the gas situation in the local city. Thus bringing gas to the forefront, and at

the same time accomplishing expressions from the people that would be helpful to the gas-man, and expressions from the gas-man that would create a better understanding on the part of the public.

We believe forums of this nature in a vast number of our gas-served cities would accomplish much.

A LIFE OF USEFULNESS

HOW absolutely wrong one is who says that the copies of a magazine are a "Passing Show." We are brought right up against the fallacy of any such idea or statement, by a paragraph in a letter received this morning from one who is about to place a manufactured article upon the market in the gas-field. He says, "Enclosed find \$2.00 for one year's subscription to the 'Gas Industry Magazine.' I have just happened to see one of your 1914 issues, and was surprised at the information to be received from your valuable publication."

In the instance we have cited, it so happens that the individual is of the appliance side of the field, but why not anticipate that manufacturers who advertised in the GAS INDUSTRY Magazine of 1914 may yet be receiving in 1922 returns from their early advertising after like manner?

Only a matter of a few days since, we received a letter from a gas company desiring information regarding an article that appeared in 1905 in an issue of our magazine, THE GAS INDUSTRY, then entitled, "Light."

Could there possibly be better evidence of lasting service? Is it likely that the circulars and folders and other like indirect, though sometimes termed *direct* publicity—products of 1905 and 1914, are still in existence, and are still rendering service? **HARDLY!**

FIFTY CENTS NET

THE Manufacturers Light & Heat Company desires to give its customers who pay on time a rate of fifty cents per thousand cubic feet net. This is slightly above a former rate, at the same time the discount for cash is larger than formerly, thus the consumer while being charged more, is given to understand that the company does not intend to keep all of the increase. A revision of the company's schedule has been placed in the hands of the Public Service Commission of the state, the intent being to divide the company's service into districts, two in number in western Pennsylvania one district to be termed Newcastle, the other District No. 2.

The man who decides to hold off until things improve may find when things improve that the man who held on and helped them to improve is so far ahead that he can't be caught.—*Vision.*

We know what we are, but know not what we may be. Shakespeare.

U. S. Government Bulletin Contains Valuable Advice on Oil Camp Sanitation

[illegible][illegible]

Nothing is more unjust or capricious than public opinion. Hazlitt

To empty the trap, pour boiling water in from the top. When the flies have been killed, remove the top screen and dump the trap.

The premises must be kept clean or the flies will not be attracted to the traps.

FLY BAITS.

Interesting tests on the relative effectiveness of fly baits is given in War Department Document 897, Notes on sanitary appliances, April, 1919, page 28. The following baits are suggested:

The total number of flies caught was 43,005. Of these 35,642, or 82.88 per cent, were house flies. The blue-bottles numbered 4,444, or 10.33 per cent, and the horse-flies 1,732, or 4.03 per cent.

The baits in the order of their efficiency and in their catches were as follows:

It is thus seen that of the 15 different baits used only 4 seemed to be really efficient, namely:

1. Fish heads and fish scraps.
2. Overripe banana with sour milk.
3. Bran mixture No. 2: Bran 2 pounds, corn meal 1 pound, syrup $\frac{3}{4}$ pound, water 3 pints.
4. Salmon, in cans, with perforated top.

All of these baits fulfill requirements Nos. 1 and 2 of an efficient bait, but the fish baits fall down on the third requirement, viz, that the bait used shall not constitute a nuisance. The older the fish baits got and the more abhorrent their odor the more efficient they seemed to be.

The four most efficient baits included two of the putrefactive and two of the fermentative type. The odor given off by the latter is pleasant rather than otherwise. While the percentages given have all referred to the house fly, it may be stated that the two fermented baits were the most efficient as far as the blue-bottle and horseflies were concerned.

It seems to be necessary for a bait to have either a fermentative or putrefactive odor to be efficient.

1. Beef liver, in cans, with perforated tops.	13. Fish heads and fish scraps.
2. Mashed cheese and molasses.	14. Bran mixture No. 1: Bran 3 pounds, constarch $1\frac{1}{2}$ pounds, sugar 3 pounds, yeast 4 cakes, water to 5 gallons.
3. Sweet corn, in cans, with perforated tops.	15. Bran mixture No. 2: Bran 2 pounds, corn meal 1 pound, syrup $\frac{3}{4}$ pound, water 3 pints.
4. Fermented canned corn.	Note.—The bran mixtures were allowed to ferment before use.
5. Molasses, water and vinegar.	
6. Milk, water and bread.	
7. Bevo, water and bread.	
8. Ripe bananas, split longitudinally.	
9. Garbage, fermented with yeast.	
10. Fermented canned plums.	
11. Canned salmon, in cans, with perforated tops.	
12. Overripe banana and milk.	

	Per cent of total catch
	Per cent of total catch
Fish heads and fish scraps	21.34
Overripe banana and milk	21.30

Bran mixture No. 2.....	20.72	Bevo, water and bread	1.58
Canned salmon, perforated top	14.95	Milk, water and bread	1.26
Fermented canned plums	7.52	Molasses, water and vinegar .....	.99
Bran mixture No. 1.....	5.29	Fermented canned corn	.63
Garbage fermented with yeast	2.25	Sweet corn in cans.....	.13
Ripe bananas split longitudinally	1.83	Mashed cheese and molasses .....	.10
		Beef liver, in cans.....	.05

Regarding the mosquito nuisance, which should not be mentioned as such, but should be designated as "a menace," the following is stated:

MOSQUITOES.

Some varieties of mosquitoes are carriers of disease, including malaria and yellow fever. The female of one variety, Anopheles, can acquire malarial parasites by biting a person who has them in his blood and can inject them into other persons whom she later bites, thereby spreading the disease.

Mosquitoes breed in stagnant, preferably dirty, pools. The females of some varieties lay eggs one at a time; the females of other varieties as many as 300 at a time, which float on the surface of the water in the form of a raft an eighth of an inch or more in length, that can readily be seen with the naked eye. In about two days the eggs hatch and form the larvæ or "wrigglers," to be seen so frequently in rain barrels. The larvæ breathe air through a tube a little to one side of one extremity. If their air supply is cut off they die. In about a week each larva changes into a chrysalis from which about two days later the mosquito emerges.

Mosquitoes can be destroyed by draining or treating the places where water collects. Old tin cans, bottles, or any waste vessels that will hold water should be removed or destroyed. Tubs and barrels used to store water for domestic purposes should be kept covered so that mosquitoes can not enter to lay eggs. Holes in trees or stumps, roadside puddles, and depressions in rocks should be filled. Ditches should be kept clean so as to permit a free passage of water through them. Edges of pools should be kept free from grass, and marshes should be drained. Where draining is not practical, stagnant water should be sprayed at frequent intervals with kerosene or crude oil. The oil forms a scum on the surface of the water and prevents the larvæ from getting air. Large pools may be stocked with fish, which feed on the larvæ.

As a rule, however, mosquitoes are not a menace to an oil camp, because sooner or later oil accumulates on practically all of the stagnant water about the camp.

As we hope that the year 1922 will be productive of various new pools being discovered in oil fields, or pockets in gas fields, where camps will grow up and perhaps form the nucleus of future villages, it would seem timely to mention the subject of the location of camps, and regarding this phase the Department's statements are as follows:

Try and be right as well as sincere. Haweis.

LOCATION OF CAMPS

A camp should be on well drained ground. Even though it be necessary for the men to walk a short distance to and from work, this rule should be followed. The living quarters, kitchen, and commissary houses should be on the higher ground, with the stables, corrals and chicken pens on the lower, so that surface drainage will be always from the former toward the latter.

Until success in drilling has determined that the camp is to be permanent, temporary bunk houses on the plan of the smaller cantonment buildings recently used by the United States Army should be satisfactory. It is well to arrange the houses in accordance with modern town planning, as this will add greatly to the appearance of the camp and will facilitate keeping it clean. If there is any prospect that the camp will become permanent, trees

unless they are already on the site and can be cleared to harmonize with the surroundings, should be planted in neat rows about the buildings, and every encouragement should be given employees to plant lawns and gardens.

Toilets, if the pit type is used, should if possible be at least 50 feet to the rear of the houses. However, in the writer's opinion, this type of toilet or any other that does not preclude the possibility of flies coming in contact with the excrement before it can be properly disposed of is dangerous. No matter what efforts are made to screen such toilets and keep them fly proof, it is only a matter of time until the high checking of the boards or carelessness

of the users, flies are admitted and become a menace to the health of everyone about the camp. If the camp is of such a temporary nature that the use of privies seems advisable, the danger from them should never be overlooked, and they should be built and kept fly proof.

A removable receptacle privy consists usually of a suitable water tight receptacle incased in a substantially built fly tight wooden box, which serves as a seat. The hole in the top of this box is covered with a hinged lid and the lid is usually screened to provide proper ventilation. The lid is also arranged to drop in place by its own weight when the privy is not in use. Either the top or the front of the box is also hinged to permit the removal and cleaning of the receptacle.

This type of sewage disposal is recommended by some authorities as preferable to the open back privy. The success of such a system depends in constant care, as periodic emptying and cleaning of the receptacle and keeping the box fly proof are absolutely necessary. If not properly constructed and cared for, after a few months of service the lid of the box may warp and not close well over the hole, the box may check, and the door may sag, so that flies have comparatively free entrance and protection against the spread of contagion may be no better than with the ordinary privy. However, when given the proper care, this system has been and is rendering good service in many places.

CLOSET LOCATIONS

Closet closets are now being placed in the market

by certain manufacturers and are well worth adoption. The bulletin of the Kansas State Board of Health, August, 1918, gives a description and opinion of this kind of sewage disposal.

CLOSURES

In the past it has been the practice at permanent camps and in many small cities and towns to convey sewage by a water carriage system into a cesspool, because the cesspool was covered up and so far from the buildings that the noxious gases did not become a nuisance. It was supposed that the sewage was being disposed of properly.

Undoubtedly there are places where this system properly disposes of the sewage, but in the author's opinion such places are the exception, as the successful operation of a cesspool depends on septic action. To insure septic action, the surface of the water in the pool should remain at practically a constant height, that is, the water should seep into the soil at the same rate it enters the pool. This, of course, is seldom possible. On wash days, for example, there may be an influx of water that will almost fill the cesspool. When the water recedes, the scum of bacteria and excreta on the surface will stick to the walls of the excavation and if the cesspool is not properly covered it will, like the open privy, afford a breeding place for flies. When the sewer system is not in use, as during the vacancy of buildings, all the water may seep out of the cesspool, and the scum of excreta and bacteria left behind may cover the bottom as well as the sides. Repeated occurrences of this kind may so affect the porosity of the soil that the water will cease to percolate through it, with the result that the pool overflows and becomes a positive danger to everyone living in the vicinity. Any type of sewage disposal that does not preclude the possibility of flies coming in contact with the excreta or other waste material is unsatisfactory.

For the location of privies see also the Bulletin of the Bureau of Health for January, 1919, page 25.

WATER HEATING



ALBANY, N. Y., January 10, 1919.—Tests concerning the heating of water in the home have been carried on by the Kansas State Agricultural College at Manhattan, Kan., under the direction of this investigation was to determine the heating factors in the use of coal, kerosene, gas, and electricity in heating water heaters.

1. The first test was made with the supplying hot water heater, which is the standard type of water heater for a single family home.

2. The second test was to operate the heater

3. The third test was to operate the heater with a gas burner, which is the standard type of water heater for a single family home.

4. The fourth test was to operate the heater with a gas burner, which is the standard type of water heater for a single family home.

5. The fifth test was to operate the heater with a gas burner, which is the standard type of water heater for a single family home.

6. The sixth test was to operate the heater with a gas burner, which is the standard type of water heater for a single family home.

All men commend patience, although few be willing to practise it —Kempson.

Kerosene	37%
Gasoline	40%
Manufactured gas	60%—67%
Electric	81%—97%

For a family of three for general domestic purposes, bath and laundry where the range boilers are well insulated, the following will apply:

Fuel per month	Quantity per month	Cost per month
Soft coal (\$8.00 per ton).....	300 lbs.	\$1.20
Kerosene (one burner, 15c per gallon).....	15¾ gal.	2.36
Gasoline (20c per gallon).....	19 gal.	3.80
Gas (automatic-type heater, \$1.25 per 1,000 cu. ft.).....	2,700 cu. ft.	3.38*
Electric (circulation, immersion or direct-contact type, 750-watt, at 2c per kw. hour).....		7.50

Tests of the pilot on automatic gas water heaters showed consumptions of from 34 to 127 cubic feet per day.

"The advantage gained by covering range boiler tanks is evident from these results. A covering of asbestos cement to a thickness of about three-fourths of an inch reduces the losses 26 per cent. A range boiler tank cover, consisting of an inner lining of asbestos paper,

a filling of ½-inch hair felt, and an outer cover of canvas, reduces the losses 60.7 per cent. A covering consisting of asbestos paper and ¾-inch hair felt, held to the top and sides of the tank by a wrapping of white muslin, reduced the losses 71 per cent."

The foot-note from the pen of Mr. S. S. Wyer will be of especial interest to natural gas companies, especially since natural gas was not included in the schedule of tests made by the Agricultural College, and likewise because statements of Mr. Wyer are based upon a full and complete knowledge of conditions in the natural gas field, Mr. Wyer having long served in this field with every possible detail at his command.

While Mr. Wyer's conclusions are always very definite and direct, as are likewise his statements, we consider them always based upon composite data, conclusions not being reached from any one angle. Mr. Wyer's statements and conclusions sometimes strike quite severely at one or another interest, but we believe them to be founded upon a desire on his part to be just to all concerned, let the axe hit where it may.

*Note by S. S. Wyer—Since natural gas has twice the heating energy of manufactured gas, one-half the volume would have done the same work. If the gas cost had been 50c per "M", the monthly fuel cost would have been \$0.67.

Facts About McKeesport

Samuel S. Wyer, of Columbus, Ohio, forwards the following data regarding the decline of the natural gas pool at McKeesport, Pa., a pool that presented one of the greatest pyrotechnic displays in the recent history of natural gas. It produced probably the best paying gas well in the world, and yet soon took to the toboggan, and slid rapidly as a money producing pool, to the valley of losses far below.—*Editor's Note.* Mr. Wyer's deductions are as follows:

McKeesport Natural Gas Rainbow

THE McKeesport gas pool, 15 miles southeast of Pittsburgh, has been the most exploited natural gas field that has ever been developed. The original Foster well—probably the best paying gas well in the world—was "drilled in" August 23, 1919, and turned into the People's Natural Gas Company's main line six days later. Since the field was located close to existing lines, little gas was wasted in getting this and succeeding wells connected.

The unusual success of the first well resulted in a wild scramble for leases and concentrated drilling sites and produced such unwarranted drilling operations that up to October 1, 1921, 608 wells have been drilled of which 429 were dry or abandoned and only 129 producing.

From September, 1919, to September, 1921, the average daily deliveries per well declined from 31,200 "M" cubic feet to 35 "M" cubic feet—of which 17 "M" cubic feet was from the original well—the rock pressure de-

clined from 1,400 pounds to a few pounds, and the producing wells increasing to a maximum of 185, September, 1920, declined to 129, September, 1921.

Up to October 1, 1921, the total production from the pool has been:

Entire pool18,295,773 "M" cu. ft.

Original well 5,750,709 "M" cu. ft.

At 16c per "M", this would mean an income of less than \$3,000,000. Considering the enormous profits made by promoters and stock sellers and the exorbitant prices paid for leases and drilling operations, probably \$25,000,000 of actual cash contributed, primarily by small stock holders, has gone into the field. The capital loss, therefore, will be great and instead of the investors finding the pot of gold, in this natural gas venture, they must stand a loss of more than \$20,000,000.

Why Money Was Lost

This was due, primarily, to lack of appreciation of the following:

The open flow of natural gas wells, that is, total volume that will be discharged into the open air with no back pressure other than atmospheric resistance, is always

Order is man's greatest need, and his true well-being.—Amiel.

much larger than—usually about four times—the actual average delivering capacity into a line and is always expressed in cubic feet, whereas, gas is always sold in “1,000”—abbreviated “M”—cubic feet. The open flow figure in cubic feet is the one always given to the newspapers and the investing public because it looks large, but the return must be made on the marketing unit which is 1,000 times smaller so that, for instance, a 1,000,000 cubic foot open flow well could have only 1,000 marketing units and would average only 250.

There is no regeneration, when the gas is used, it is gone. A fixed amount was compressed by nature into an underground reservoir and as the gas is removed the pressure must decline and the delivering capacity of the wells will go down with the decline in pressure.

Excessive drilling resulted in an enormous waste of money—although very little gas was wasted—since more than 600 wells were drilled where 10 would have been ample to ultimately secure the entire output in the underground pool.

Except for the man making the first lucky strike, the natural gas industry is not generally profitable, nor the gold mine the public have been led to believe it was. Natural gas is, primarily, a by-product in the search for oil, when oil is not found, the natural gas operations alone are usually unprofitable. In fact, if it were not for the gambling spirit in petroleum operations, most natural gas pools would not have been found. This is an unfortunate condition from a public viewpoint because in order to maintain continuity of service and supplement residue supplies still remaining, it is necessary to be continually hunting for new supplies and the bitter experience of this McKeesport Field tends to retard such prospecting.

—Based on data from the Bureau of Topographic and Geological Survey of the Commonwealth of Pennsylvania.

REGARDING PETROLEUM

PRESIDENT Thomas A. O'Donnell of the American Petroleum Institute, in a very excellent address, interjected the following, which items should be brought to the fore:

“I think I can speak for the entire petroleum industry of this country when I say to our President: ‘May God be with you in your effort to curtail the senseless competition in armament now going on throughout the world.’ We will gladly forego any possibility of profits to the industry in supplying our navy with its fuel oil, but in the event that the rest of the world is not prepared to join us heartily in accomplishing the purpose, our first line of national defense will continue to be our navy.”

Regarding the slowness of the process of exhaustion, Mr. O'Donnell stated that the exhaustion of petroleum is a much slower process than generally understood by those not familiar with the business. “Although new pools under high pressure and large production per well constitute a very important factor in supplying the constantly increasing demands occurring in the past, the very

foundation, however, of the stability of the petroleum industry of this country is largely due to settled production of the old wells not subject to the violent decrease in production of new wells.

“It is not surprising that the general public is apprehensive as to the future supply when we take into consideration that in the press of the day, reports are constantly being made of oil gushers with a capacity of ten to twenty thousand barrels per day and then a short time afterward these same wells are found to be producing a comparatively small quantity of oil. The facts are that the general average daily production per well in the entire United States is about four and sevenths barrels per well, and, as the years pass and the old wells of small production accumulate they add increasing stability to the petroleum industry on a large scale We have many thousands of wells producing oil which, in the aggregate, form an important part of our supply that have, in many instances, been constant producers for periods of over forty years.”

Mr. O'Donnell considers as unreasonable the frequent statements that our petroleum resources will be exhausted within twenty years or less, and cites approximately 275,000 producing wells in this country with a history of the stability of the small well for the past fifty years, and the constant discovery of new pools of great importance.

“I believe,” said Mr. O'Donnell, “that the petroleum resources of the world have hardly been scratched and that a free open-door policy with unrestricted opportunity for all people to prospect and develop in any part of the world to which their notion might direct their efforts would result in the production of sufficient oil to meet the requirements of all useful purposes to which it might be subjected for many generations.

“Unfortunately,” said Mr. O'Donnell, “there has been a world-wide tendency by all governments to regulate, direct, and restrict the petroleum operator in his efforts. A statement of an English statesman to the effect that ‘business organized by Government and supported by political action is destructive and dangerous,’ applied to petroleum and its future to a greater extent, in my judgment, than any other line of development now taking place in the world.”

The address from which we have quoted was delivered at the second annual meeting of the American Petroleum Institute, recently held in Chicago. The sessions were excellently well attended; the speakers were chosen from among those far up in the industry. The program embodied the following:

“The Current Year in the Petroleum Industry,” Walter C. Teagle, president, Standard Oil Company (New Jersey).

“Co-operative Competition vs. Combination,” Judge Edwin B. Parker, general counsel, The Texas Company.

“The Mid-Continent Refiner,” D. W. Moffit, vice-president, Cosden & Co.

“European Conditions and Outlook,” Edward Prizer, president, Vacuum Oil Company.

“Mexico,” by Edward L. Doheny, president, Pan-American Petroleum & Transport Company.

For one man who can stand prosperity there are a hundred that will stand adversity.—Carlyle.

"Oil Production During the Past Year and a Glimpse of the Future," by Frank Haskell.

"Impressions of an Independent Operator," by J. D. Collett.

"Industrial Relations," by H. F. Perkins.

"The Automotive Industry and Oil," by Harry L. Horning.

"Oil—the Law of Supply and Demand," by R. L. Welch.

"Limitations Imposed on Economy by Volatility Changes in Motor Fuel," by F. C. Mock.

"Practical Effects of Too Low Volatility," by O. C. Berry.

"Relationship of Natural Gasoline to the Motor Fuel Problem," by W. M. Welch.

"Value of Research to the Petroleum Industry," general discussion.

"The Relation of Supplies to the Petroleum Industry."

Louis C. Sands, vice-president, Oil Well Supply Company.

"Co-operation of Federal Government in Discovery and Production of Petroleum," Hon. Edward C. Finney, first assistant secretary, Department of Interior.

"General Business Conditions in the United States," Harry A. Wheeler, vice-president, Union Trust Company (Chicago) and formerly president, Chamber of Commerce of the United States.

"Looking Ahead," Harry F. Sinclair, chairman of board, Sinclair Consolidated Oil Corporation.

"Some Things We Might Be Doing," Henry L. Doherty, president, Cities Service Company.

"Reminiscences," J. C. Donnell, president, Ohio Oil Company.

"As John Bull Views It," Sir John Cadman, formerly His Majesty's Petroleum Executive.

"World Highways of Trade," A. C. Bedford, chairman of board, Standard Oil Company (New Jersey).

Standardization of Field Equipment

By J. R. STOCKTON

Since the processes involved are so similar in field practice as applied to oil and natural gas, this address of J. R. Stockton before the American Petroleum Institute has a direct bearing upon matters pertaining to gas country supplies and their standardization.—Editor's Note.

THE oil producing business is rather strikingly an individualistic business. From the day a man takes his first wildcat lease he gets the attitude of "To thunder with the other fellow; I must get mine while the getting is good." How strong this tendency is is best evidenced by the trials and tribulations of the mutual benefit associations among oil producers. The same spirit has seemingly, and naturally, passed to the manufacturers of oil well supplies, tools and equipment. The lines of machinery and equipment made by the various companies have been developed very largely for individual merit with little or no apparent effort at standardization or regard for the customer.

True, some standardization, or approximation to it, has been developed in the industry, but it has grown in a haphazard way with no broad plan, no study of engineering soundness, with no goal beyond the expediency of the moment, no investigation of other possibilities, little or no co-operation between manufacturers and between manufacturer and user, no guidance, no leadership. Such standardization must, of necessity, be

fragmentary as relates to the industry as a whole and incomplete within the items affected. Recent supply catalogues announce a standard cable tool joint, or rather that such joints are nominally standardized, but they qualify this with the statement that these joints differ as between various manufacturers. In other words, a purely nominal standardization. These and other manufacturers have made some sporadic attempts at standardization, but these have largely been confined to standardization within their own product and the endeavor to induce operators to standardize on the use of the materials of that particular manufacturer.

I am told that one company recently held a conference of its representatives at an expense of over \$60,000 solely for standardization with its own line. And in talking rig iron standardization the other day with a salesman for one concern, I was informed that there should be no difficulty whatever in the matter; all that is necessary is for all operators to buy his company's irons exclusively. I am happy to say that the officials of his company take a very different attitude, and are quite active and broadminded in the rig iron movement.

Lack of Co-operation Between Suppliers and Operators

There has been a noticeable lack of co-ordination between the manufacturers and the operators, the fault lying fully as much with one as the other. The need

Don't think of all the things money would buy—if you had it.

MORE ENCAGEMENT



Men's business here is to know for the sake of living, and that is the very thing which the men of Harrison

As John Bull Views It

SIR John Cadman of England addressed the members of the American Petroleum Institute at their late meeting, having been invited upon former occasions to address oil men of the United States, but heretofore finding it impossible to arrange a trip to this country at a season when one of our conventions would be under way. Sir John said, in part, as follows:

"I have been able to visualize the tremendous part which the United States plays in the economic mechanisms of the world.

"It is not so many years since Kerr, the apothecary, was selling petroleum as a cure for all ailments—it is not so long since (62 years) Drake pierced Pennsylvania soil, and gave birth to the great petroleum industry. It is not so long since but a small fraction of the crude product was utilized, the greater portion being sacrificed as unsalable and useless. It is not so long since the civilized world literally lived in darkness, and knew nothing of the kerosene oil lamp and the present rapid means of motor transport. And, it is well within the memory of most of us when oil companies were obliged to exercise all their ingenuity, not merely to find an outlet, but to foster and promote new uses which would enable them to dispose of their production.

"No industry in the history of mankind has shown such phenomenal growth, and no industry contributes more to modern civilization than the petroleum industry. The search for minerals dates back to time immemorial, and is as old as history itself; but we find ourselves co-workers in a new branch of engineering science of paramount importance, and upon our shoulders rests a grave responsibility. Petroleum is today awakening and sustaining enormous public interest and rightly so. This unprecedented growth is mainly due to the untiring and unrelenting efforts, indomitable perseverance and enterprise exhibited by the pioneers of your great country.

"It is not unnatural that such a mobile and efficient form of energy should replace the more cumbersome solid, coal; but I am not one of those who imagine that in the long run there will be a real rivalry between these two commodities. Each has its sphere of usefulness and the world certainly requires every economical form of energy, be it either liquid or solid.

"I believe the day is not far distant when the chemist will be able on a commercial scale to add a hydrogen atom to a coal molecule and so convert that solid black form of energy into the more convenient mobile fluid. I firmly believe that the success which has been achieved in the past is due to its comparative freedom from control and restrictions by governments, and the striking example of the success achieved by the United States may in some measure be attributed to the unfettered way in which the enterprise has been developed.

"We in Europe who were within such close proximity to the scenes and horrors of war, and were stimulated by agencies more vivid than could possibly reach all of you, recognized what stupendous efforts were being made in the United States to provide ample supplies of this vital commodity. We recall with pride how voluntarily and cheerfully you subscribed to the gasolineless Sunday. The names of such Americans as Bedford, Requa and O'Donnell will be handed down and associated with those who played such important parts during that stirring period.

"Now that the war is over, it is not unnatural that Government organizations created to control industry should cling, or attempt to cling, to these industries, and herein lies a danger. An unmistakable sign of the times is the state exploitation of petroleum lands or to join in partnership with others for that purpose.

"Government control and Government operation is much the same all the world over. I do not know how far your industries were or are controlled, or are under the influence of your Government, but I do know that in England all the industries which were controlled during the war and for some time after the armistice, are having a very hard time to bring themselves back to industrial and competitive efficiency. It is not necessary for me to enumerate the many instances where such industries have inherited a Government legacy in the form of a whole series of regulatory orders, restraints, and impossible conditions. Without the stimulus of war, Government control is characterized by wasteful and ill-advised expenditure which is inherent in the system itself. When Government takes over large commercial undertakings, its influence is soon reflected in increasing costs to the public which it serves, or by increased costs of operations which really amounts to the same thing.

"I had the privilege a short time ago to deliver a presidential address to the British Institution of Mining Engineers and I then pointed out that what the coal mining industry in the United Kingdom suffered from most was over-legislation, and if that industry was to survive, a respite from the well-meant but bungling attention of Parliament was essential.

"I think that the lesson which the petroleum industry has learned out of its war experience is to take upon itself a full realization of its responsibility to the public; it is to enjoy freedom from Government control or interference. The solution, it seems to me, lies within the industry itself, by getting together to promote its welfare by common consent of its members and to co-operate in every way possible.

"Another phase of the world's petroleum problem is exhibited in the growing anxiety in certain countries to impose heavy taxation upon crude petroleum and its products. If the industry is to have a normal and healthy expansion this form of toll is not only detrimental

No man will find the best way to do a thing unless he loves to do that thing.—Japanese Proverb.

DEPENDABLE HEAT CONTROL



Every letter you write is an advertisement for or against you. Atlantic Connecting Rod!

In this connection it might not be out of place to suggest that gladly the movie-manager should exploit the modern gas-range upon his screen, along with other gas domestic-time-savers, especially "featuring" the oven-heat regulating device which has today become a worthy feature in one form or another, although there is but one "Lorain," to his advantage pointing out the fact that where heat is thus automatically "regulated" in the oven, the housewife who adopts the method will save sufficient gas to pay her movie ticket, and accomplish available time that she may spare to the enjoying of screened-stories.

If we have counted correctly, there are now about seventeen types of gas-ranges manufactured with oven-heat controls, and we doubt not that this number will become augmented rapidly, in view of the fact that the idea has proven a practical one, not being *new, as of the last number of years*, but as having been thoroughly tested-out, and perfected first in the form of this product from Lorain.

As a new saying *versus* the one of the past, let us say, "*Give the inventor his due.*" It is, therefore, that we are mentioning the name of the original oven heat control, though, as we have said, there are now approximately seventeen types or adaptations of the idea, each possessing merit, the particular phases of each of which we leave to be told-of by their makers. Our editorial mission is to "boost" for the principle and the method that is fast becoming universal, such being the case, as a consequence of the principle being well-worth-while.

All heat-controls, as there are patents, and patents pending, and because various theories regarding adaptation exist, cannot be in every respect alike; therefore, it becomes the province of each manufacturer to tell *his* story regarding *his* particular type, and as a little piece of friendly editorial advice, let us say—GO TO IT, FRIEND MANUFACTURER!

FLEXIBLE GAS TUBING

AS one line of efficient service to its members, along with many other pieces of fine work in behalf of the manufactured gas industry, the American Gas Association has created a set of rules regarding gas-tubing

General: (a) Tubing for the purpose of this specification shall be made in suitable lengths with end pieces securely attached.

(b) Length of tubing for the purpose of this specification is defined as "Tubing with end pieces attached," and to be 6 feet in length.

(c) Leakage for the purpose of this specification is defined as not exceeding 0.02 cu. ft. per hr. per 6 foot length.

(d) Rubber slip ends when used with flexible tubing must have internal corrugation to conform with corrugations of the standard hose nozzle.

(e) When a metal helix is used in the construction of tubing, it shall be of one continuous length, without splices or other joints and be of itself gas tight.

(f) Each length of tubing shall be labelled with a tag attached to the tubing or a marking on the end pieces or

both. The inscription shall state the manufacturer's name, the length of the tubing and the capacity or rate of gas flow in cubic feet per hour under the condition of a pressure drop of one inch of water, as determined by Test No. 2.

(g) Bare metal tubing depending for its tightness on a thread-like rubber or similar packing is not permissible.

Strength: (a) The length of tubing shall be so resistant to crushing that it will support a transverse load of 75 pounds per lineal inch without either permitting a leakage of gas or a restriction of the gas flow as determined by Test No. 3.

(b) The length of tubing shall be able to withstand without leakage, for five minutes, a steady lengthwise pull of 50 pounds as determined by Test No. 4.

(c) The length of tubing shall be able to withstand without leakage or becoming detached, the shock resulting when a 5 pound weight fastened at one end to the length of tubing, falls through a height of 30 inches while the other end is supported by the rubber slip end attached to a standard hose nozzle held in a vertical position as determined by Test No. 5.

(d) The length of tubing when extended its full length shall be capable of withstanding without leakage, a twisting movement acting clockwise and counter-clockwise, sufficient to produce an angular deflection of 180 degrees per foot of length. The tubing must also return to its original position at the conclusion of the test, as determined by Test No. 6.

Flexibility: (a) The tubing shall be sufficiently flexible that it will make continuous contact with a cylindrical form three inches in diameter for 180 degrees of its circumference when a weight is suspended from each end of the tubing. The weight for tubing not greater than $\frac{1}{4}$ inch internal diameter shall be 2 pounds and for tubing from $\frac{1}{8}$ inch to $\frac{5}{8}$ inch inclusive, shall be 4 pounds, as determined by Test No. 7.

Resistance to Freezing: The tubing after a period of 30 minutes shall show no leakage when wrapped snugly $1\frac{1}{2}$ times around a cylindrical form 3 inches in diameter before and immediately after being kept at a freezing temperature for six hours, as determined by Test No. 8.

Resistance to Heat: The length of tubing shall be so resistant to heat that it will not soften sufficiently to become sticky, or for any material to ooze through the outside covering or inside the tubing when the length of tubing is kept for six hours at a temperature of 125 degrees Fahrenheit: first in dry air, second in saturated air. At the conclusion of each test the tubing shall not leak when subjected to wrapping test as described in Test No. 8.

Elasticity of Rubber Slip Ends: The rubber slip ends when forced over a form 20 per cent larger than the internal diameter of the rubber end and permitted to so remain for two weeks, shall, upon removal, show an enlargement of not more than ten per cent of its normal diameter as determined by Test No. 10.

Gripping Power of Rubber Ends: The rubber ends when attached to a standard hose nozzle so that 3 or more corrugations are engaged must withstand a longitudinal pull of 20 pounds as determined by Test No. 11.

Better far to die in the old harness than to try to put on another.—Titcomb.

AROUND THE BELT

New Walls, New Pipe Lines, New Contracts, Additions and Extensions—A Fund of Valuable News Gathered for the Journal Through Many Sources

TRADE PERSONALS

Burner, Julius, has been transferred to the Empire Gas & Fuel Company, Bartlesville, Okla., is now on the staff of the Texas Company as scout, and will make his headquarters at Ardmore, Okla.

Cady, A. L., has resigned from his post as Superintendent of the Randall Gas Company, Randall, West Va.

Davis, William N., of Bartlesville, Okla., at the annual meeting of the Mid-Continent Oil & Gas Association was re-elected General President of the organization.

Duncan, M. E., has been elected Vice-President of the Stout Gas Company, organized at Bridgeport, West Va., for the purpose of undertaking drilling operations in territory located near that city.

Ferguson, E. J., of the Traffic Department of the Empire Company, Bartlesville, Okla., has resigned from that post, and is now located at San Jose, Cal., where he is engaged in another line of business.

Fisher, E. K., is Manager of the Gas & Electric Shop of the Philadelphia Company at Sewickley, Pa.

Gage, W. F., who was formerly with the Lone Star Gas Company of Dallas, Tex., as General Manager, is now with the Pure Oil and Humphreys interests, and is in charge of the construction of an eight-inch pipeline extending from Mexico to a point on the Gulf coast.

Henderson, Clyde C., has taken up his duties as New Business Manager of the Alliance Gas & Power Company, Alliance, Ohio.

Kerry, H. A., has been made Vice-President and General Manager of the Gas & Electric Shop of the Philadelphia Company, Pittsburgh, Pa.

Lambert, C. A., is President of the Stout Gas Company, recently organized at Bridgeport, West Va.

Landrey, H. W., has been appointed in charge of the Philadelphia Company's Gas & Electric Shop at Bridgeport, Pa.

McDonald, H. S., is Manager of the Gas & Electric Shop of the Philadelphia Company, Gas & Electric Shop, Pittsburgh, Pa.

McIntosh, P. H., has been made Manager of the Gas & Electric Shop of the Philadelphia Company, Pittsburgh, Pa.

Scott, Harry H., was elected President of the Mid-Continent Oil & Gas Association at the recent annual meeting of that organization.

Stone, James E., has been appointed General Manager and Treasurer of the Alliance Gas & Power Company, Alliance, Ohio.

Tramm, E. K., of Sacramento, Cal., is President of the Arbuckle Oil & Gas Company, which will undertake drilling operations in the northern part of Yuba County, Cal.

Wedding, A. L., is in charge of the North Side Gas & Electric Shop of the Philadelphia Company, Pittsburgh, Pa.

DECEASED

Thomas, Howard A., President of the West Virginia Central Gas Company and the West Virginia & Maryland Gas Company, and Vice-President of the Eastern Oil Company, died lately at his home in Buffalo, N. Y.

Tracy, Frederick D., spent for a number of years with the Eastern Oil Company, died recently in Buffalo, N. Y.

ITEMS OF FINANCE

KANSAS.—Information—An extra dividend of \$4.00 a share has been declared by the Kansas Oil & Gas Company, which is payable to the stockholders on or before the 15th inst.

—The 1920 dividend of the Philadelphia Company, which was increased from \$25,000 to \$250,000.

NEW FRANCHISES

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A true philosopher is beyond the reach of fortune —Lancelot

Chickasha—The Chickasha Gas & Electric Company holds a franchise under which it will distribute natural gas in this city. Arrangements are now being completed for the constructing of a pipe line connecting the city with the supply lines of the Oklahoma Natural Gas Company, a distance of four miles. The work is under the supervision of F. D. Shaffer, Manager of the Chickasha Company.

WYOMING—Powell—John McFayden of Casper, Wyo., who is General Manager of the Ohio Oil Company, has been granted a franchise under which natural gas service will be installed in this city.

INCORPORATED

TENNESSEE—Nashville—The Capital Phosphate Oil & Gas Company has been incorporated with a capital of \$250,000. Those named as incorporators are: Walter O. French, J. R. Allen, Winfred French, J. E. Hill and G. W. Terry.

WEST VIRGINIA—Bridgeport—The Northwestern Gas & Oil Company has been formed here with a capitalization of \$25,000. Those named as incorporators are: J. Ben Stout, A. J. Williams, C. E. Williams, T. J. Hefner, B. H. Martin, J. J. Johnson, C. S. Bartlett, Bridgeport, W. Va.

The Stout Gas Company, capitalized at \$15,000, has been organized by local business men for the purpose of drilling for oil and gas on a lease near this city. Officers of the new concern are: C. A. Lawson, President; M. L. Dunkin, Vice-President; Arden Teter, Secretary and Treasurer, and Frantz Dillon and William Gray, Directors.

Charleston—Authority has been secured by the New-lon Oil & Gas Company of this city to surrender its charter.

Clarksburg—The Sir Oil & Gas Corporation has been formed in this city with a capital of \$25,000. The incorporators named are: R. R. Roberts, N. C. Steele, W. Lee Williams, George E. Lockwood, Clarksburg, and Charles F. Ingraham, St. Marys, W. Va.

Mannington—The J. B. Thomas Oil & Gas Company has been incorporated with a capital of \$25,000. Among those interested in the venture are: J. B. Thomas, Carney B. Thomas, M. B. Efaw, W. R. Thomas, Mannington; L. L. Thomas, E. A. Park, Blacksville; A. H. Toothman, Fairmont.

Parkersburg—A charter has been granted the Concrete Oil & Gas Company of this city. The company is capitalized at \$150,000. Among those interested in the formation of the new concern are: E. H. Lockhart of Elizabeth; P. D. Sheppard, W. K. Sheppard, R. E. Davis and A. W. Windom of Parkersburg.

PER CUBIC FOOT—RATES

ARKANSAS—Fort Smith—The La Salle Oil & Gas Company has been granted permission by the State Railroad Commission to charge 10 cents per thousand for gas delivered to the city. The company in its petition asked for a 15-cent rate, while the city contended for a 7-cent rate. The rate of 10 cents recommended by the Commission is a compromise between the two.

KENTUCKY—Louisville—The Louisville Gas & Electric Company has been granted permission to supply its customers with mixed artificial and natural gas. The price for the first 5,000 cubic feet will remain the same as heretofore; the rate for the next 5,000 cubic feet will be 5 cents over the natural gas rate; for the next 10,000 cubic feet, 10 cents over the natural gas rate, and over 20,000 cubic feet the increase over the natural gas rate will be 25 cents per thousand.

The gas will be mixed only during the winter months when shortage of natural gas would reduce the efficiency of the company's service. The increased rates will be effective only during the period of mixed gas service.

OHIO—Cincinnati—The new ordinance affecting local gas rates gives the Columbus Gas & Electric Company permission to charge a flat rate of 50 cents per thousand during the months of April to October, inclusive, while during the winter months a sliding scale ranging from 50 cents to 65 cents per thousand has been granted. A minimum monthly charge of 75 cents has also been allowed. The rate formerly charged by the company was 35 cents per thousand.

Toledo—The Northwestern Natural Gas Company has increased its rates in this city. Bowling Green, North Baltimore, Maumee and Perrysburg. The new schedule ranges from 37 cents per thousand for the first 5,000 cubic feet used to 67 cents per thousand for gas consumed over 15,000 cubic feet. The former schedule ranged from 37 to 52 cents per thousand.

OKLAHOMA—Holdenville—Local gas rates have been temporarily increased by order of the State Corporation Commission. The increase affects only gas used for industrial purposes. The new rate for this service is 15 cents per thousand.

Okmulgee—The Okmulgee Gas Company has been given permission to increase its rates temporarily 10 cents per thousand. The federal court also granted a temporary order restraining the state corporation commission from putting into effect the rate schedule drawn up by it for this city.

Wagoner—The Commonwealth Public Service Company has been denied permission to increase its rate from 48 cents to 65 cents per thousand.

PENNSYLVANIA—Bradford—The Bradford Gas Company has made effective a rate of 50 cents per thou-

Courtesy is the oil that lubricates the parts of the business machine.—B. F. Goodrich & Co.

GENERAL

To be out of place is not necessary to be out of place. Johnson.

Enid—The Enid division of the Oklahoma Gas & Electric Company has organized a club called the "Enid Division Thrift Club." All the employees are members and the object is to save a certain amount each week, if it is nothing more than 50 cents. O. G. & E. stock is bought every month and constitutes the assets. The club will close its books at the end of each year, and the members will be paid in stock or cash, whichever they prefer.

Garvin County—No. 2 well of Jones & Nelson on the Newberry lease, section 14-1n-3w. is reported to be good for 6,000,000 cubic feet from a depth of 1,335 feet.

Keller and associates have completed a 5,000,000-cubic foot gasser in their No. 1 on the Derdyne tract, section 17-1n-13w, the sand being reached at 1428 feet.

Lawton—The Lone Star Gas Company recently completed its pipe line to this city, and local residents are now enjoying gas service again, after having been deprived of this convenience when the local supply failed and the supplying company went into the hands of a receiver. City Attorney S. I. McElhoes traveled by airplane to Dallas, Texas, to sign the contract with the Lone Star Company.

Nowata County—Shepherd and others in No. 3 on the Cobbs property, section 6-25-15 report a good gasser.

Oklahoma City—The Corporation Commission has ruled that beginning with the first of the year, companies in Oklahoma will be required to measure all gas in the various stages of its journey from the well to the ultimate consumer.

The purpose of the order is to enable the commission to obtain accurate figures upon loss of gas in course of its transmission from the producing wells to consumers meters.

The gas companies have expressed their entire willingness to cooperate with the commission, in installing meters at all points necessary to secure accurate figures upon loss of gas.

This loss, according to testimony presented to the corporation commission, ranges all the way from 10% to 70% of the entire amount of gas purchased for transmission to consumers.

The order requires measurement of gas through meters when it enters the transmission line, and when it leaves the transmission line and enters the local distribution system, and also as it leaves the distribution system and is delivered to the ultimate consumer.

The order also requires measurement of all gas for light, heat and power, in connection with its transmission and distribution.

Oklmulgee County—Smith and associates have completed their No. 2 on the Townlot lease, section 18-13-14, and report a production of around 20,000,000 cubic feet at 2562-72 feet.

Oklahoma County—The Oklahoma Natural Gas Company has been granted permission to construct a pipe line

which will carry gas across the western portion of section 36-12n-4w.

Pauls Valley—According to report John Ringling of New York and Frank Ketch of Ardmore, Okla., have interested themselves in a project which contemplates the laying of an eight-inch pipe line from the gas fields in Garvin County to this city, and to distribute natural gas in this city.

Paynee County—The Creek Oil Company has completed a good gasser in its No. 1 on the Ellis lease, section 27-20-6. The sand was reached at 2766-78 feet.

OREGON—Astoria—The Lower Oil & Gas Company has showings of oil and gas in a test near this city, at a depth of 2868 feet.

PENNSYLVANIA—Allegheny County—In the Duff City field, Kaltenbach Brothers have a gasser in the salt sand at a test on the J. B. Means farm.

Clarion County—The Neely-Clover Company has completed a 12,000,000 cubic foot gasser in the Pine Hollow district. The company has leases on approximately 2,000 acres in this section, and has completed six producing wells.

Greene County—On Ruffs Creek, Washington Township, the Philadelphia Oil Company's test on the T. J. Huffman farm is a fair gasser in the fifth sand. In Aleppo Township, the Cameron Oil & Gas Company's test on the William Loar farm is a good gasser.

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Comfort of Our Guests Our First Consideration.

A wise man will make more opportunities than he finds.—Bacon.

The Peoples Natural Gas Company, Inc., of
Washington, D. C., is planning to
construct a new gas plant in the city.

The company has been operating for
some time and has been successful in
obtaining a large number of new
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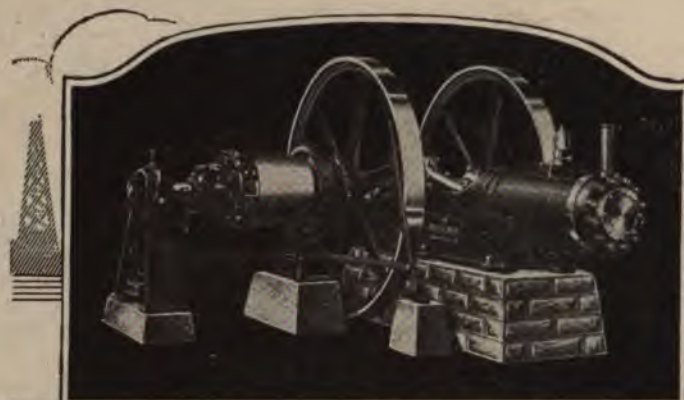
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a running stream. It
must not be stopped, fro-
zen by fear, or dammed
up suddenly by those that
preach false and harmful
doctrines. — Winston Churchill



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Columbus Heating & Ventilating Co., Columbus, Ohio.
Continental Supply Co., St. Louis.
Cooper, C. & G. Co., Mt. Vernon, O.
Wm. M. Crane Co., New York.
Cutler Hammer Mfg. Co., The, Milwaukee.

Dayton Pipe Coupling Co., Dayton.
Davison, N. C., Gas Burner & Weld'g Co., Pittsburgh.
Doherty & Co., Henry L., New York.
Dresser, S. R., Mfg. Co., Bradford, Pa.
Duquesne Burner Service Co., Pittsburgh.

Eclipse Gas Stove Co., Rockford, Ill.
Economy Stove Co., Cleveland, O.
Economy Burner & Engineering Co., Pittsburgh.
Equitable Meter Co., Pittsburgh.
Eriez, Stove & Mfg. Co., Erie, Pa.
Estate Stove Co., Hamilton, O.

Fenwick-Reddaway Mfg. Co., Newark, N. J.
Fidler, Edwin H. Co., Philadelphia, Pa.
Foxboro Co., The, Foxboro, Mass.
Franklin Co., The, Massillon, Ohio.

Frick & Lindsay Co., Pittsburgh.

Garlock Packing Co., Palmyra, N. Y.
Gas Age, The, New York City.
Gas Appliance Co., Cleveland.
Gas Engineering & Const. Co., Pittsburgh.
Gas Record, Chicago.
General Gas Light Co., Kalamazoo.
Germer Stove Co., Erie.
Gilfillan Machine Works, Ebenezer, N. Y.
Goodrich, B. F. Co., Akron, O.
J. H. Grayson Mfg. Co., Athens, Ohio.
Grinnell Co., Providence, R. I.

Hammon Coupler Co., Pittsburgh.
Hays Mfg. Co., Erie.
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Hazard Mfg. Co., Chicago.
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Humphrey Company, Kalamazoo, Mich.

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Ingersoll-Rand Co., Pittsburgh.
International Halc Gas Mixer Company, Chicago, Ill.
International Tank & Mfg. Co., Parkersburg, West Va.

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MacWhyte Co., Pittsburgh.
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National Tube Co., Pittsburgh.
Natural Gas Industry, Buffalo.
New Bedford Cordage Co., New York City.
New York Belt'g & Pack'g Co., New York.
Northrup Equipment Co., Parkersburg, West Va.

Ohio State Stove Co., Columbus, O.
Oil & Gas Journal, Tulsa, Okla.
Oil City Boiler Wks., Oil City, Pa.
Oil Trade Journal, New York.

Oil Well Supply Co., Pittsburgh.
Oxweld Acetylene Co., Chicago.

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Pennsylvania Furnace & Stove Co., Warren, Pa.
Petroleum Publishing Co., Tulsa, Okla.
Petroleum Supply Co., Steubenville, O.
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Pittsburgh Reinforced Brazing & Mach. Co., Pittsburgh.
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Plymouth Cordage Co., N. Plymouth, Mass.
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Precision Instrument Co., Newark, N. J.
Pritchard Supply Co., Mannington, W. Va.

Rathbun-Jones Eng. Co., Toledo.
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Reliable Stove Co., Cleveland.
Republic Iron & Steel Co., Youngstown, O.
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Reznor Mfg. Co., Mercer, Pa.
Riesenman Mfg. Co., Ltd., Franklin, Pa.
Robinson Packer Co., Tulsa, Okla.
Roebing, John A. Sons Co., Trenton, N. J.
Geo. D. Rorer Corp., Rockford, Ill.
Rossendale-Reddaway Belt'g & Hose Co., Newark, N. J.
Ruud Mfg. Co., Pittsburgh.

Safety Gas Stove Lock Co., Nashville, Tenn.
Sands Mfg. Co., Cleveland.
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South Chester Tube, Chester, Pa.
Spang, Chalfant & Co., Pittsburgh.
Sprague Meter Co., Bridgeport, Conn.
Stacey Mfg. Co., Cincinnati.
Steele & Tube Co. of America, Chicago.
Stitt Ignition Co., Columbus.
Stokes Deep Well Co., Shreveport, La.
Strause Gas Iron Co., Philadelphia.
Superior Oil & Refining Co., Columbus.
Symmonds, T., Buffalo, N. Y.

Taylor, W. P. Co., Buffalo.
Toledo Pipe Thr'd'g Mach. Co., Toledo, O.

Union Rubber & Asbestos Co., Trenton, N. J.
United Seal Co., Columbus.
Upson-Walton Co., Cleveland, O.
U. S. Rubber Co., New York.

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Welsbach Co., Gloucester City, N. J.
Westcott Valve Co., Seneca Falls, N. Y.
Western Gas Construction Co., Fort Wayne, Ind.
Westinghouse Electric & Mfg. Co., Lester, Pa.
Wheeling Steel & Iron Co., Wheeling.
Williamsport Wire Rope Co., Williamsport, Pa.
Worthington Pump & Mach. Corp., Buffalo.

York Derrick Co., Washington, Pa.
Youngtown Sheet & Tube Co., Youngtown, O.

ANNUAL CONVENTION NATURAL GAS ASSOCIATION OF AMERICA
and EXHIBITION OF SUPPLY MEN'S ASSOCIATION
Kansas City, Kan., May 15 - 17, 1922

FROM THE EDITORIAL MAIL BAG

FINANCIAL CONDITIONS

Informal Statements by Herbert P. Howell, Vice-President of the National Bank of Commerce in New York

The present business situation is distinctly a two-sided proposition. There is much in it to be encouraged about. There is also much to be regarded seriously. I am an optimist on a number of accounts plenty of facts to support my case, but I am partly right. But I have no hesitation in expressing the conviction that the unfavorable factors outweigh the favorable factors. We are not going to have a great and rapid revival of business such as the country might feel justified in hoping for. But we are going to have a steadily continuing gradual trend toward more stable and more active business conditions.

Business was in far better shape at the end of 1921 than at the beginning of 1922. It will be in better shape at the end of 1922 than it is now, provided business men as a whole continue to act sensibly and economy, conserve their capital and efficiency, and in business rather than in speculation and expansion.

Stable conditions will prevail in business because of the conservative and prudent observance of business men. Business that tries to run ahead of the conservative progress of the times toward normal will be disappointed. If there is spread out will bring disappointment and failure. As a rule 1922 will be a good year for remembering that in the normal time business is business and not speculation.

Stability can be made and success can be established during 1922. But there must be limiting the means of business and efficiency within the bounds of conservative business operations. A wave of turnover is inevitable. There is a good price restoration, but the ultimate price level must be accepted. Therefore, profit margins in business must be affected by economies in production and distribution. There must be a close relationship of production and distribution.

One of the most favorable factors in the general situation is the condition of banking. There are no indications of a general inability to borrow or to extend credit. The banking facilities in that respect are sound.

It is felt that money will be loaned in the future in the same liberal manner as in the past.

General business conditions are in a state of general uncertainty, but the business community is not in a state of general depression. There is a general feeling of general uncertainty, but the business community is not in a state of general depression. There is a general feeling of general uncertainty, but the business community is not in a state of general depression.

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although many prices will recede, but we hardly fear a general price demoralization.

The attitude of the public in respect to buying is now a more calculable business factor. It can be set down that the public has become thrifty and discriminating in buying. Increased purchasing power and unemployment have made it so. People are willing to buy what they require so long as they are able and where they can find fair prices. A thrifty public in the long run is better for business than is an extravagant public.

There are impediments to the healthy functioning of the markets and distribution in the way of a complete readjustment of the costs of production and distribution. These obstacles must be overcome before anything like a fundamentally normal business situation can be re-established.

Among the obstacles are mining, transportation and building labor wages. They must be further readjusted. There can be no further going completion of general readjustment until these sources of high production and distribution costs have been dealt with, also the burden of taxation. The country's obligations must be met by taxes, but there must be a reducing of current government expenditures, and there should be a shifting of the burden of necessary taxation so as to reduce as much as possible its hampering effects upon productive enterprises.

It is to be expected that even before in modern industrial countries there has been such a pressing need for economy through reduction of waste and increase in efficiency.

High priced inventories must be reduced. It seems inevitable that some further losses must be taken in this connection. There are no other alternatives.

America is a country that is well equipped to do a tremendous business. It wants to go ahead with the business, but it must be able to prosper with the market in a healthy and sane way.

The business community is in a state of uncertainty. It is not in a state of general depression, but it is in a state of general uncertainty. There is a general feeling of general uncertainty, but the business community is not in a state of general depression.

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He is good that does good to others — La Bruyere

benefit the public and benefit the merchant by stimulating his sales.

These instances of wage and price readjustments are cited to emphasize the community of interest that all elements have in the consummation of readjustment.

No class in the community can expect to enjoy the benefits of deflation without sharing the burdens. Deflation, if it means anything, means a reduction of incomes as well as expenditures. It means a reduction of consumers' as well as producers' prices. It means a reduction of wage and salaries as well as profits and dividends.

There can be no equilibrium if any element in the community by resisting readjustment demands higher wages or higher purchasing power for the fruits of its efforts than are justified by economic relationship with other phases of industry, commerce and finance.

The year that lies ahead, I am confident, will see a progressive smoothing out of the inequitable conditions now prevalent in business.

Never before was there a greater demand for individual initiative in business, never before a greater need for penetrating judgment. To say that the times require to an unusually high degree the practice of conservatism, economy and efficiency is only to say that they require the intensive application of the methods by which, in the long run, the lasting and substantial progress of the world has been built. The full fruits of brilliant pioneering enterprise, in whatever field of endeavor, would never have been harvested had not discovery been followed by hard work.

The year 1922 may not be one of great realizations and fulfillments, but it will be one of laying the strong foundations for better business years to come.

STATE TAX—MOTIVE POWER GASOLINE

IN his biennial message to the legislature of the State of Mississippi, Governor Lee M. Russell urges the careful study of the new motive power, gasoline and kerosene. He points out their increasing usefulness and need, and suggests that the State's annual outlay for them will run into millions of dollars; that their grade is now known to be so poor that one-third or more of the motive power is entirely lost; and further suggests the regular inspection of these two products, it being probable that their analysis could be done without charge at two of the state institutions in their chemical laboratories by simply enacting laws empowering the heads of these institutions to call upon vendors of these products whenever they see fit for samples being sold for them. If necessary, the sheriff or some other county officer could procure these specimens, seal and ship them under regulations, and, therefore, no inspector would be necessary. If, however, the legislature thought an inspector important, the vendors of these articles could be required to pay a tax amply sufficient to support this outlay.

The man who goes around wishing he had never been born is not the only one who regrets it

In another section of his message, the governor urges the enactment of a law for a tax of 2c per gallon on gasoline sold and used in the state for transportation purposes. This should provide a fund of about one million dollars annually. "The users of automobiles and trucks wear out more roads than anybody else, and they should pay in the main for the construction and upkeep of these highways."

****Connecticut now collects 1c a gallon on all gasoline sold for automobile use, at filling stations.—Editor.

Section 1 defines "gasoline" as (a) any volatile substance produced from petroleum, natural gas, oil shales or coals, heretofore sold under the name gasoline; (b) any volatile substance or product of not less than 46 deg. Tagliabue Baume test derived wholly or in part from petroleum, natural gas, oil shales or coal; (c) any other volatile substance or product of not less than 46 deg. Tagliabue Baume test sold or used for producing motive power in internal combustion engines or for producing power for propelling motor vehicles.

Section 8 provides: "That in the event that oil or gas is found in paying quantities, then the said board for oil development are hereby given full authority to make all necessary arrangements for saving, storing, conveying and marketing same in such manner and to such extent as their judgment may approve.

Governor McKelvie of Nebraska called a special session of the legislature to meet January 23rd. It is understood that among other subjects a tax on gasoline is up for consideration.

TO REGULATE TRANSMISSION LOSSES

CONFERENCES have recently taken place between the Bureau of Mines and the Natural Gas Association of America regarding transmission losses of natural gas in the Pennsylvania and West Virginia fields. Officials of various large gas companies operating in these states also attended the conferences. The plants of manufacturers of gas regulators and meters, in the Pittsburgh district, were visited in connection with the investigation.

OPPOSES OIL TARIFF

ONE of the strong opposers of oil tariff is J. B. Klumpp, of the United Gas Improvement Company, Philadelphia. He designates as an imposition, a permanent tariff on crude petroleum and fuel oil. Mr. Klumpp is a thinking man, a man of high ability and integrity. His opinions may well be hearkened to. Mr. Klumpp was of the A. G. A. Gas Oil Committee, and has given an exceeding amount of time, thought, and attention to this subject. Recommendations from him should find a willing ear among our legislators.

REGARDING CONTROL

A REQUEST has come to us for an opinion as to what right has a gas company or a utilities commission to govern in what form of application or by what method gas shall be used after it has passed the meter, providing the gas is not used for illegitimate purposes. We desire to respond rightly and as nearly as possible according to what might be deemed the facts of the case, therefore we prefer before replying to discuss the situation and to ask in point the views of some of our leading gas men and commission men.

In all commercial lines the purchaser of an article becomes its rightful owner and the general understanding is that he may do with his purchase as he sees fit.

One of the questions is, if a purchaser buys gas, and it is metered to him, and is thus vended at an agreed price, what possible right has a commission or a gas company to state that the purchaser shall not use the gas purchased either in a lighting burner, or a range, or an heater, or a stove, or a furnace, whether the furnace is built for gas, for coal, or for both gas and coal, or should it be equipped with a gas burner not built in?

Another question is, why should not every gas company or commission the rather seek to control its methods of sale which would seem to be more within the scope and rights of the owner, both by limiting the amount of gas to be sold to a purchaser per month, or by charging as do some companies upon the upward sliding scale basis, which charges a reasonable amount of gas has been used actually, and then the user through the charge amounting to so much a unit per thousand cubic feet for subsequent use, that practically none could afford to consume more than such estimated amount of gas as would form the basis for the volume that a company could reasonably grant to any one customer, then assuring gas to all our citizens.

The main point at issue with our inquirer is, has a gas company a right, or has a commission a right to say that gas shall not be used in a certain manner, furnace, stove, or certain specified place. There are three means at present of restricting the volume consumed, one is by limiting the use of gas in furnaces, stoves, heaters, gas heaters, or to limit the volume of gas sold on an upward sliding scale.

Another is by limiting the volume of gas sold on an upward sliding scale, and by the excessive use of gas. Which of these means of restriction is apparently superior, more equitable and more reasonably illegal?

By allowing all persons to restrict as they wish the use of gas, they should be held liable for the gas used.

Another restriction is by gas companies themselves, by limiting the use of gas in furnaces, stoves, heaters, gas heaters, or to limit the volume of gas sold on an upward sliding scale. The gas companies should be held liable for the gas used. We would like to hear from our readers on this subject. Address: Editor, The Gas Industry Magazine, Buffalo, N. Y.

REGARDING MOTOR FUEL

DR. VAN H. MANNING, Director of Research, American Petroleum Institute, is quoted as saying:

Despite the increase in gasoline production, the entire output is being used, he pointed out, "and we are entering the winter with stocks no greater than normal." The speaker said, however, that there should be no concern over the future supply of motor fuel, stating that there are now four sources to look to—domestic wells, foreign resources, oil shales and substitutes.

There is no more striking picture of the pressure of automotive fuel requirements upon our oil resources than that of the "per car availability" of our crude oil production each year. For instance, in 1911 there were 315 barrels of crude oil for each car; 1912, 219 barrels; 1913, 194 barrels; 1914, 155 barrels; 1915, 115 barrels; 1916, 86 barrels; 1917, 67 barrels; 1918, 58 barrels; 1919, 50 barrels; and 1920, 48 barrels.

As indicated by this comparison, the increase in crude oil production was actually insufficient to meet automotive requirements.

Without the subsequent perfection of important refining processes, the development of the natural gasoline industry and the spreading of the quality range of commercial gasoline, the production of crude oil would have been all too insufficient.

SEVENTEENTH ANNUAL CONVENTION

THE Natural Gas Association of America and the Supply Men's Association asked responses to the following four questions:

First: In what manner could the exhibits be improved upon over previous years?

Second: In what way can the Natural Gas Association of America, through its program, better assist the Supply Men?

Third: How can the standard of entertainment be improved upon?

Fourth: What can you have said to make our press divisions that may be applicable to coming years?

We should not have responded to the request for replies until that time in the Association's hands by the 24th of January, the late date passed. When an Association meets, the right of the Supply Men to questionnaires from the industry members of the association should be taken into consideration by sending specific reply.

VOLATILITY OF GASOLINE

DURING the winter months, the volatility of gasoline is a factor of great importance in the selection of the proper grade of gasoline for use in the motor. The volatility of gasoline is a measure of its tendency to vaporize, and it is a factor of great importance in the selection of the proper grade of gasoline for use in the motor. The volatility of gasoline is a measure of its tendency to vaporize, and it is a factor of great importance in the selection of the proper grade of gasoline for use in the motor.

Men's evil manners live in brass, their virtues we write on water.—Shakespeare

NATURAL GAS A PUSHHER

Other Means than Natural Gas Must be Provided for the Expelling of Petroleum

LARGE quantities of oil, perhaps as much as 60 or 80 per cent. of the original reservoirs, are left underground in the United States when wells are abandoned, because no means have been determined whereby it is possible to recover more than a small percentage of the oil, according to A. W. Ambrose, chief petroleum technologist of the Bureau of Mines. This failure to effect a greater recovery of the underground oil is due to the exhaustion of the subterranean gas flow, says Mr. Ambrose.

The manner in which gas serves as an expulsive medium was recently shown by an experiment at the Petroleum Experiment station of the Bureau of Mines. A steel container about three feet long and three inches in diameter was filled with sand which was then thoroughly saturated with oil. The amount of oil introduced was known by weight and measurement. After the sand had been saturated, gas was forced into the container under a pressure of 200 pounds to the square inch. Then a valve at one end was opened and the gas allowed to escape, bringing with it perhaps 18 per cent. of the oil put into the container.

In other experiments, the amount of oil recovered varied from 15 to 25 per cent. depending on the pressure and other conditions. After the gas had forced out 18 per cent. of the oil, the container was held in a vertical position for the purpose of determining how much oil would drain out, but the capillary force exerted on the oil was so great that only a negligible quantity of oil drained from the sand.

"This simple experiment emphasized the fact that gas is the predominant factor in moving oil to the well and that when the gas is gone the production is gone," declared Mr. Ambrose. "In any event, it is unquestionable that large quantities of oil are left underground, and, whether the figure is 60 per cent. or 80 per cent., it is too large. In certain parts of the Appalachian fields, the practice of forcing compressed air or gas into a central well, from where it goes to adjoining wells and carries the oil with it, has caused wells to produce as much oil as they had up to the point when considered ready for abandonment.

"There are undoubtedly other means of effecting a greater recovery and these questions should be studied and applied before the wells are abandoned."

CO-OPERATIVE COMPETITION VERSUS COMBINATION

FOR a long period we have had in mind the question, "What is Combination?" Of course, one might observe the definition in our dictionaries, but when it comes to business matters where should the line be drawn between "Co-operative Competition" and "Combination."

No-man's-land lies between these two, but may easily be crossed by either, and when crossed, the forces of the two sides, intermingling, form a non-definable line. Judge Edwin B. Parker, General Counsel of the Texas Company, in discussing this very matter, said, "The ever-increasing complexity in the machinery of modern civilization renders co-operative effort a corollary to the attainment of the maximum of efficiency at the minimum of cost, and such co-operation between competitors along legitimate lines is not only entirely legal, but highly laudable, and in the public interest. He outlined the activities of governmental departments as related to the various industries, saying that through governmental and industrial co-operation duplication of effort and expense will be eliminated, economic waste will be discovered and prevented, new uses will be found for products and the consumer will be educated to such new uses.

After calling attention to the fact that war conditions rendered it not only desirable, but necessary for competitors to combine, with all that term implies, he said that such conditions no longer exist.

"I am convinced that, so far as the petroleum industry is concerned," he said, "the very real advantages flowing from the legalized combination under government control would be more than offset by the obvious disadvantages of such a program. . . . Of one thing, however, we may be certain: if government interference in the form of restrictive legislation to prevent monopolies and restraints of trade and to keep competition free is not effective, then government regulation and control of industry will follow. Let not the industry fool itself as to that. All knowledge of this fact should impel industry to observe the law as it is written, both in letter and in spirit."

"It is interesting to note," Judge Parker said, "The somewhat curious fact that the government, in seeking more effectually to strike down monopolies, used as a weapon the enforced restriction of the free power of merciless competition. The law has curbed competition in order to make it free. We are now coming to see that the ultimate solution lies not alone in keeping competition free, but also in adding to and developing the enlightenment of self interest."

BETTER HANDWRITING

LACK on the part of Public School educators to continue the practice of enforcing commercial writing in public schools up to the point of turning out good hand-writers, is responsible to a large extent for the poor handwriting on the part of so many who cannot lay the blame at the door of non-use of handwriting because of present-day dictating, which in many instances causes indifferent writing when one takes "pen in hand".

Among the criticisms passed by employees in various gas companies is that of poor handwriting on the part of other employees, great inconvenience being resultant largely through carelessness on the part of writers. In some companies the matter has gone so far as to have resulted in requests made by employees to the company to enforce legible writing.

Latent genius is but a presumption. Amiel.

Automobile Safety Lessons

Lesson Outline No. 12-A

SAFE AND EFFICIENT DRIVING: GENERAL

1. A man may have a mechanically perfect car, but because of careless driving he may cause an accident or result in serious injury or death to himself or others.
2. Reckless driving is not a demonstration of skill.
3. A moment or two saved today by reckless speeding or race efficiency, for speeding tomorrow may result in a smash that will lay up the car for several days and you for several months. Hurrying to get ahead of a train, a street car, or another vehicle saves only a moment or two at the ultimate destination and the gain is not worth the price; there is too much danger of accident.
4. The best drivers are especially careful at dusk or twilight. There is then neither enough daylight nor sufficient artificial light to make objects distinguishable at ordinary distances.
5. Slow up for all turns in the road. Blind corners are dangerous. When it is impossible to see what is coming from around the corner, be prepared to stop. Sound horn a short distance before the corner.
6. Don't zig zag from one side of the street to the other.
7. When installing chains on the rear wheels, install them on both wheels or none at all. Only one chain can result in a serious accident. Chains on all four wheels help the steering of the car.
8. There are ruts at the bottom of almost every hill. Hitting these ruts at too high a speed may cause the driver to lose control of his car.
9. Drive slowly at bridges and at culverts. A bad rut in a stone in the road may throw your car against the structure.
10. When attempting to pass another vehicle going in the same direction, start turning out to the left at least 25 feet to the rear. If you get up too close your view of the road ahead is obstructed and you may turn suddenly in front of another car coming toward you. When you have passed a car don't cut back into the road too soon.
11. Always be careful when backing. Sound horn three times, signal other cars, and look back, not ahead, to see where you are going. Mirrors are valuable at all times.
12. Clean windshields give you a clear view ahead. Every car should have a secondary windshield, rain wiper, or windshield wiper which will prevent snow or ice from obstructing the driver's view.

13. When driving, do not attempt to carry on a conversation with others in the car. Small children should preferably sit in the rear of the car; they should never be held in or between the arms of the driver. Safe driving demands your full and undivided attention.

14. Be sure and signal when driving toward or away from the curb.

15. You should shut off the engine, remove the ignition key, and set the emergency brake, when leaving the car. Cramp the wheels to prevent the car from moving accidentally.

COORDINATING WITH POLICE

16. The traffic officer has a difficult job at the best and drivers should make every effort to assist him.

17. At times the officer's directions may seem to be contradictory or unnecessary, but we should remember that he may have excellent reasons for his action, reasons which we perhaps cannot understand at the time.

18. He is responsible for all accidents which happen at his station. Let us treat him as we expect him to treat us. His good will is more desirable than his ill will.

Complete sets of twelve copies of the "Safety Bulletins and Safety Lessons for Automobile Drivers" can be had at cost by addressing the National Safety Council, 1100 North LaSalle Street, Chicago, Ill. 60610.

WORLD PEACE

PRIEST K. Takashi Hara of Japan, who some time since was slain, sounded the keynote of all our spiritual attempts at peace in communities of peace in our homes as well as peace among nations when he said:

What mankind needs to reach is to heal the gaping wounds of the great affliction the world is now convulsed with—the lack of permanent peace.

Peace is not to be reached by whatever force may be, by a temporary expedient. It must originate in the very souls of the nations, obtaining a shared common to the hearts of all peoples. Such a new goal of human education is the first and limited number of men whose intellects and emotions could be turned up for the task.

It is a work which the mutual understanding of all nations, the human nature and reconciliation, the mental and emotional relations alone can achieve.

Don't be "consistent," but be simply true —Goklamuth.

VAST EXPENDITURE

AT the second annual meeting of the American Petroleum Institute, Mr. J. C. Donnell made the statement that:

"\$948,000 will have to be expended in 1922 on productive oil acreage and well operations, if this country is to maintain its present oil production." Mr. Donnell is president of the Ohio Oil Co.

"The present daily gross production of the United States is approximately 1,300,000 barrels," the speaker said, "and by reason of raising this oil there is a drainage per year of 135,415 acres; so that there must be acquired and operated during the year 1922 a like amount of productive acreage to maintain present production, the cost of acquiring which, including royalty, drilling, lifting and wildcatting, will represent a total outlay of \$948,000,000."

Mr. Donnell pointed out that his estimate of the acreage necessary to maintain sufficient production to supply requirements is based on his past experience in the important oil fields in which he has drilled and managed the operation of 42,000 wells.

There would seem to be excellent grounds to believe that exhaustion of supply in sections of the country may be easily offset by tremendous reserve, according to Mr. Harry F. Sinclair who is chairman of the Board of Directors of the Sinclair Consolidated Oil Corporation. Mr. Sinclair said:

"There is plenty of petroleum, and always will be. Exhaustion of the world's supply is a bugaboo. In my opinion, it has no place in practical discussions. The great question we are confronting is this: Is America willing to pay the price for an adequate share of the world's supply?"

"When I say that America must 'pay the price', I refer not merely to market quotations for gasoline, lubricating oil and other petroleum products, and yet as these quotations are of fundamental importance, it may be well to treat them at once.

"Petroleum prices in 1921 on an average have been too low. In my opinion they will average much higher in 1922 than in 1921, and may average higher than ever before in the history of petroleum.

"Taking a longer view, I am confident that petroleum prices must gradually work higher. Naturally, there will be periods of depression but, in the long run, petroleum will command prices which more nearly reflect its service value."

However, Mr. Sinclair pointed out that while America is the chief consumer of petroleum products, the day is coming when the collective requirements of other countries will far exceed our own. America is still the chief producer of petroleum but he believes the day is coming when American fields will not be the largest producers and when American refiners who did not fortify themselves in foreign fields will be forced to take a minor place in the refining industry of the world.

"Unless America is willing *now* to 'pay the price' of preparedness, she will lose her position of petroleum supremacy, and the nationals of other countries will force her to 'pay through the nose'," he declared.

Mr. Sinclair said that in the last six years we had been drilling an average of about 26,000 new wells each year, of which about 7,000 were gassers or dry holes. Even disregarding the cost of dry holes, this means, he said, that we are spending more than \$300,000,000 annually in new drilling in order to keep pace with the demand.

OUR OKLAHOMA FRIENDS

THOSE in our own natural gas industry out in Oklahoma have not only much to be proud of in the matter of natural-gas resources, but the following indicates the enormous wealth of the state with its raisings of crops transformed into dollars and cents on reasonable prices paid for the products. Oil stands high in Oklahoma, but in the scale of income, dollar for dollar, it can't touch the products of the farm.

The value of all crops produced in Oklahoma in 1921 was \$176,677,000, according to estimated figures just released by the Oklahoma State Board of Agriculture. Preliminary estimates of acreages, production figures and values of the principal crops show that cotton, in spite of the ravages of the boll weevil, still leads all others with a production of 530,000 bales valued at \$43,725,000. Winter wheat is a closed second, with 3,786,000 acres planted, producing 47,325,000 bushels valued at \$40,700,000; the corn crop, with a valuation of \$24,616,000 is third. Figures on dairy and poultry products are not included in the estimates, but it is certain that if these figures were available, the total value of all farm products for 1921 would be greatly in excess of the values of the crude oil produced in the state during the same period, which has been estimated at 113,747,000 barrels, valued at \$201,901,000.

GASOLINE TAX TO RAISE SOLDIER BONUS

CONGRESSMAN BACHARACH of Jersey has introduced a bill providing a soldiers' bonus plan, the revenue for which is proposed to be derived from "a tax of three cents per gallon on sales and deliveries by manufacturers or producers of gasoline; said tax to be payable and collected at the source of production." Mr. Bacharach expects that the proposed tax would yield from \$240,000,000 to \$250,000,000 annually. This estimate is based upon an estimated sale of about 8,000,000,000 gallons each year. Mr. Bacharach also expects that it would be necessary to apply the tax for a period of ten years to secure the revenue necessary under the bonus plan.

Idle curiosity causes a lot of people to work overtime.

What Is Gasoline?

*A Discussion of the Quality of the Various Grades of Gasoline and
Their Uses*

What Is Gasoline?

*A Discussion of the Quality of the Various Grades of Gasoline and
Their Uses*

IN a very interesting address by Dr. C. K. Francis, Chief Chemist of Conden & Company, delivered before the Petroleum Institute, Dr. Francis said, after propounding the question, "What is a sulfone?"

Two men were homeward bound from a late party when they got into an argument. One said:

By George there is the sun coming up. The other
 (sings)

that's not the way, that's the manner

After considerable discussion they made a wager and agreed to let the first person they would meet decide the question. After sauntering down the sidewalk for what a block they met another man who was also somewhat maddly on his feet, and one of them said:

Look here, Bill and I have an argument. He says that's the moon up there, and I say it is the sun. We've a bet on it, and want you to settle it for us."

He with one arm around the lamp post, steadied himself and said:

Well, my friends, it is unfortunate, but I am a stranger in this town and have not yet become familiar with the landmarks.

I know a gentleman who for some years had studied petroleum products, who presented a paper on gasoline at one of the scientific societies. He, quite learnedly, discussed gasoline, its various properties and uses. When the time came to discuss the paper one of the first questions asked him was, "What is gasoline?" To come from a recent United States Bureau of Mines publication. Although gasoline is one of the most important commodities of today, yet the public has meager information regarding it. They are not familiar with its landmarks."

After telling the foregoing to the 10 members, he
 stated as follows:

The additional point is that I don't believe a Ford - or even a Porter Arrow would be able to distinguish between genuine products apart.

Therefore, while to certain technical men the full text of the Doctor's remarks would prove not only interesting but valuable, we will quote some portions of the Doctor's statements.

Through chemical analysis we find that gasoline is composed of paraffins, naphthalenes, olefins, napthenes, mono-paraffins, aromatic compounds, and the normal

product appears to be made up largely of the homologues from heptane to tridecane. But the consumer does not give a hang about these. What he wants to know is, has the gasoline the proper quantity of pep? This desirable property is more technically classified under volatility, which is determined by fractional distillation, and includes the determination of the initial boiling point and end point.

Most of the gasoline today is bought and sold on the basis of its volatility, the more volatile gasolines having an end point around 400 are consumed by the aeroplane motors, the intermediate grades are consumed by auto-motors, and the lowest grade by trucks and tractors. Mixtures of gasoline and naphtha, when properly blended, make a very satisfactory motor fuel. However, poor blending of natural gasoline may produce a product which may be very objectionable in that the initial boiling point would be too low and the quantity of the light material so high that the carburetor of a motor would be out of adjustment, especially as the heavy material would have to be passed through at the same adjustment. A small quantity of natural gas gasoline helps to lower the initial boiling point and therefore makes the starting of the motor easy. Of course the addition of large quantities of heavy ends to natural gas gasoline makes proper gasification of the fuel impossible and causes deposition of carbon in the cylinders and dilution of the lubricating oil when it leaks past the rings.

Differences of attitudes often wonder why results from gasoline purchased here and there are not alike. This might somewhat be answered by presenting the story that the factors related are as follows:

At the time Agent returned in Philadelphia, extensive contact was maintained with subject. He was asked if it had been decided with subject to make a "hit" on the subject of the investigation. He stated that he had no opinion. It looked as if the subject would be a waste as much as he should be. He stated that if a "hit" had been made in this case, it would have been a waste of money. He stated that he had been asked to make a "hit" on the subject of the investigation.

[illegible]

Well, I was having a party of friends and I decided to make a big pile of money and I was sure that there was money to be made in the rubber business and I thought that rubber was a safe bet. I think that it is now a good

Truth is truth, come whence it may — Webster

deal of it—that there are men in the business who don't know what they are doing.

"All gasolines should be free from acid, and products which may decompose and form acid.

"The total available energy of a gasoline is, of course, determined from the heat of combustion. This has been found to be very close to 20,000 B.T.U. Many gasolines examined have not shown a variation from 20,000 B. T. U.'s of more than 2 to 3 per cent. The heavier gasolines have a higher energy value per gallon than the lighter ones.

"The quantity of sulphur occurring in gasoline is important. The test for detecting sulphur is known as the 'doctor' test, in which use is made of a solution of litharge in caustic soda, with the addition of a pinch of sulphur. When a mixture of gasoline and this solution is shaken there should be no black precipitate formed, and the gasoline should not be discolored. If the gasoline does not react with the 'doctor' solution, it is classified as 'sweet', and if there is a reaction it is said to be 'sour'. Sour gasolines usually have an offensive odor, and frequently give off hydrogen sulphide, a corrosive gas, when heated to about 30 deg. F. Sometimes free sulphur finds its way into gasoline as a result of excessive quantities of powdered sulphur being added during the process of refining. This may be detected by what is known as the 'copper' test. A piece of copper placed in a small quantity of gasoline should not become tarnished or blackened when the gasoline is warmed. This is an important test, because sulphur readily combines with most metals, and has a strong affinity for copper, brass and similar alloys. A wider knowledge of this test should result in it being required for all gasolines.

"A good grade of gasoline seldom contains more than 0.01 per cent. total sulphur, but gasolines have been found on the market containing six times this quantity. The deleterious action of the free sulphur becomes apparent when it is present to the extent of 0.008 per cent., and very bad and corrosive in action when it is present to the extent of 0.018 per cent.

"At first little attention was given to the characteristics of gasoline, but, with the development of the market and favorable prices, methods were devised to classify this product. The original test was that of gravity, but it has been found that gasoline varies from 45 to 68 deg. Baume gravity, and that this wide variation is not necessarily due to any inferiority. It soon became known that the crude oil found in different parts of the country varied in many characteristics, and especially in the nature and quantity of the gasoline obtainable from these crudes. It is commonly known that a gasoline is produced in California having a gravity of 45 deg., Mid-continent gasolines commonly vary from 55 to 62 deg., and Eastern gasolines are reported to vary from 58 to 68 deg. Variations in gravity also occur as the result of requirements fixed by different States. The property of gravity is now recognized to be of little value as an index to the energy value of a motor fuel."

NATURAL GAS PRODUCTS

WHEN on the corners of streets in Pennsylvania towns great flambeaux flared day and night, week in and week out, month in and month out, no one gave thought to the fact that not only could natural gas be used for fuel purposes, but that it might be separated into propane, methane, butane, and ethane. However, some while since at Hastings, West Va., there was established a plant for the producing in commercial quantities of two of these products, namely, butane and propane.

The successful using of these in internal combustion engines without a carburetor but with a gas mixer substituted, shows us that we are gradually developing from a condition of know-little into a state of knowing-more, although really the future will be our period of knowing-much.

Butane and propane are now used successfully in metal cutting and welding, and it would appear according to statistics, that many orders for castings used in replacements are being eliminated in these days by reason of the successful use of these gases in repair work.

It is indeed interesting to note that while butane is used in metal cutting and welding, processes requiring intense heat, it is also used in refrigerating plants with just about three-quarters of the efficiency of ammonia. However, this is figured when the equipment required in an ammonia installation is used, otherwise the efficiency might be still higher. The domestic refrigerator has a great future, and we are told that butane can be made to play a lively part in this direction.

The Mellon Institute through its investigations has brought to light many interesting and valuable matters. In referring to certain investigations, Dr. James B. Garner has stated:

"Natural gas, as produced in the Appalachian and Mid-Continent fields, has an average heating value of 1,100 B.T.U.s. per cubic foot. The enriching value of eighty cubic feet of natural gas is equal to that of one gallon of gas oil. With gas oil at 6c per gallon, 1,000 cubic feet of natural gas has an enriching value of 75c. Natural gas can be mixed with blue water gas or coal gas, easily, safely, and without any overhead, production, or depreciation charges, and is, therefore, the ideal enriching gas in regions where natural gas is available. Such use of natural gas will insure to the public for many years to come, an adequate supply of gas at a cost otherwise impossible, and this use of it will conserve, in the highest possible manner, the waning natural supply.

"There are, in nature, three potential sources of raw materials adequate for the production of a supply of artificial gas; bituminous shale, oil, and coal. Artificial gas as produced on a commercial scale consists of the following varieties—shale gas, oil gas, producer gas, water gas and carburetted water gas, coal gas and coke oven gas. Coal seems to be the only raw material which is at present available as the basis for a future gas supply, and this material, therefore, is the one to which the public can look for its supply of manufactured gas."

Genius is nothing more than our common faculties refined to a greater intensity. Haydon.

Carbon Monoxide Poisoning

How to Treat Cases of This Incomplete Combustion Poisoning

09 08 06 07 08 09

last Surgeon U. S. Bureau of Mines, F. A. Surgeon U. S. Public Health Service and H. B. Brown last Surgeon U. S. Bureau of Mines, Assistant Surgeon H. L. S. Public Health Service.

CARBON monoxide poisoning is one of the most widely distributed and most frequent causes of industrial accidents. Carbon monoxide gas is a product of incomplete combustion, and since it is without color, odor, or taste, its presence is frequently unsuspected in many places where it exists. It may be found in buildings having a leaky furnace or boiler, and in buildings where a gas stove is used without a proper flue connection, such as is often found in restaurants, tailor shops, and boarding houses. People can be affected by leaks wherever water gas is formed or used. The exhaust gases from gasoline motors under average running conditions usually contain 5 to 7 per cent carbon monoxide, and sometimes as much as 15 per cent. Deaths from running an automobile engine in a closed garage are not infrequent.

14. not use army marks they are valueless to resist
all other movements

In spite of the common occurrence of carbon monoxide poisoning there appears to be no uniformly recognized treatment for a person overcome by carbon monoxide. In the recent work of the United States Bureau of Mines, however, a method has been developed which has been supported by laboratory investigation, and has proved successful in practical experience over a period of years. As outlined in this article, the method is useful in the hands of first-aid men as well as physicians.

Carbon monoxide exerts its extremely dangerous action on the body by displacing oxygen from its combination with hemoglobin. Hemoglobin is the coloring matter of the blood which normally absorbs oxygen from the air in the lungs and delivers the oxygen to the different tissues of the body which need it to do their work. The affinity of carbon monoxide for hemoglobin is about 200 times that of oxygen. Because of this, even when only a small amount of the poisonous gas is present in the air breathed into the lungs, much of the hemoglobin is locked up in combination with carbon monoxide and so cannot keep up its usual work of carrying oxygen to the tissues. These, due to lack of oxygen, cannot do their work properly. If they are deprived of oxygen long enough, degeneration sets in, and the damage to the

issues sometimes cannot be repaired, even though the patient may survive.

The victim of acute carbon monoxide poisoning usually experiences the following symptoms: Yawning, sleepiness, tiredness, a feeling that the skin is tightly stretched across the forehead, a frontal headache at first dull and intermittent and later more severe and continuous, later this headache is replaced or masked by a typical one at the base and back of the skull, which causes the sufferer to hold his head as far back as possible in an effort to obtain relief, dizziness, nausea (feeling of sickness) and lassitude also occur. The pulse is at first normal but later becomes full and rapid, the skin is flushed, the respiration becomes more rapid with exposure to the gas and later irregular. If the exposure is sufficiently long or the concentration sufficiently great, confusion and unconsciousness develop. As the victim recovers, he remains weak for some time, this is especially true of the leg muscles. Headache sometimes very severe, confusion of mind and partial loss of memory accompany recovery but these pass off in time. The nausea may be sufficient to produce vomiting. All the symptoms are accentuated by exercise, eating and stimulants. When a man is overcome by large concentrations of the gas, the symptoms follow each other rapidly and he may quickly fall unconscious. The rate at which a man is overcome and the sequence in which the symptoms appear depend on several factors: the concentration of the gas, the extent to which he is exerting himself, the state of his health and individual predisposition and the temperature, humidity and air movement to which he is exposed. Excessive high temperature and great humidity with no air movement tend to increase respiration and heart rate and consequently result in more rapid absorption of carbon monoxide.

It is a clinical form of carbon monoxide poisoning producing a tired feeling, headache, nausea, palpitation of the heart, sleeplessness and a constant mental dullness. Some people develop a tolerance for carbon monoxide, and may after a while be able to stand a dose of the gas that when first exposed to it. In the treatment of the above form of poisoning the most important factor is the removal of the patient from the carbon monoxide and a thorough rest. Though there are probably many cases now of the kind of cases that are usually recognized as such in the treatment of the gas form that is known as "gas fever."

There is a . . .

Without faith a man can do nothing. But faith can stifle all science. Amiel.

of acute carbon monoxide poisoning is to get the poison out of the blood. Every moment that it shuts the oxygen out of the hemoglobin adds to the chances for failure of respiration and failure of the heart. Every minute that the tissues are supplied with only a part of the oxygen they need increases the danger of their degeneration and permanent damage. Both to save life itself and to prevent ill health in the future, it is of vital importance to eliminate carbon monoxide from the blood as rapidly as possible.

Oxygen will take the place of carbon monoxide in the blood whenever the proportion of oxygen in the lungs is overwhelmingly greater. The speed of the change depends on the relative amounts of the two gases in the lungs and on the depth and frequency of breathing. The first step is to get the victim away from the atmosphere of carbon monoxide which he is breathing; the next is to supply him with oxygen. This may be done by getting the patient into fresh air, but only one-fifth of air is oxygen. If a tank of pure oxygen is available, it is far better to use it as the action is much faster and the after-effects, especially the headache, are much less severe and not so prolonged. The oxygen should, if possible, be given through an inhalator made similar to an anesthetic mask or Tissot Army face mask, which can be fastened over the patient's mouth, nose, or entire face. If an inhalator is not at hand, a physician may give oxygen through a nasal catheter. In the absence of any of these accessories it can be sprayed directly from the tank about the patient's face. The administration of oxygen should be started as soon as he is removed from the carbon monoxide or before, if possible, and should be kept up for at least twenty minutes.

In view of the great importance of administering oxygen to these victims at the earliest possible moment, it is recommended that all ambulances be equipped with oxygen tanks. It may be that when the victim is found his breathing has stopped, or is very weak and irregular. In this case, after quickly removing the victim to good air, or while administering oxygen, one of the rescuers should begin at once artificial respiration, by the Schaefer method. This method is described below.

Place the person* on his abdomen; remove from his mouth all foreign bodies, such as false teeth, tobacco and gum; see that the tongue is forward; turn his head to one side and rest it on his forearm, so that the mouth and nose will not come in contact with the ground, and extend the other arm forward. If the person is thin, prepare a pad of folded clothing, or blankets and place it under the lower part of his chest. Do not make this pad too thick. Do not wait to loosen the victim's clothing but begin artificial respiration without delay. An assistant may remove all tight clothing from the victim's neck, chest, and waist, and place blankets, hot-water bottles, safety lamps, or hot bricks, well wrapped in paper or cloth, about the person.

Kneel, straddling the person's thighs and facing his head; the palms of your hands are placed over the short

*Manual of First-Aid Instruction for Miners, Bureau of Mines, 1921.

ribs with your thumbs parallel with the spine about two inches apart and your fingers spread out as much as possible, the ends of the little fingers reaching just below the last rib; with arms held straight, swing forward slowly so that the weight of your body is gradually brought to bear on the person. This operation, which should take about two seconds, must not be violent, lest the internal organs be injured. The lower part of the chest and also the abdomen are thus compressed and air is forced out of the lungs. Now, immediately swing back slowly to remove the pressure, but leave your hands in place. Through their elasticity the patient's chest walls expand and his lungs are thus supplied with fresh air. After two seconds swing forward again and repeat deliberately about 15 times a minute.

Continue if necessary for at least three hours without interruption, or until natural breathing has been restored or a physician has arrived. Even after natural breathing begins, carefully watch that it continues. If it stops, start artificial respiration again.

While the administration of oxygen is by far the most important factor in the treatment and cannot be over-emphasized, other things should be done to help the patient. He should be kept *quiet* and *lying flat*, to help his weakened heart. When he revives, he should *not* be *allowed* to *walk* about or in any way *exert* himself, for there is danger of heart failure. Heat from safety lamps, hot-water bottles, or warm bricks, rubbing the arms and legs, and keeping the patient well covered with blankets all help the circulation, and aid in tiding the body over a period of low vitality. The safety lamps, hot bricks, etc., should be well wrapped in cloth or paper as a precaution against burning the patient. Other stimulants, such as hypodermics of caffeine-sodium benzoate or camphor in oil, should not be administered except by a doctor, after he has considered the possibility of over-stimulation and consequent collapse. The patient should be kept in bed for a day at least. Later he should be treated as a convalescent, being given plenty of time to rest and recuperate. Just how long this time should be depends on the severity of his poisoning and should be decided by his physician.

SUMMARY OF TREATMENT

1. Administer oxygen as *quickly* as *possible*, and in as pure a form as is obtainable, preferably from a cylinder of oxygen through an inhalator mask.
2. Remove from atmosphere containing carbon monoxide.
3. If breathing is feeble, at once start artificial respiration by the prone pressure method.
4. Keep the victim flat, quiet, and warm.
5. Afterward give plenty of rest.

—U. S. Bureau of Mines, Reports of Investigations.

Thought leads to resignation.—Amiel.

Appliance Sales

Gas Cooked Dinner at Bradford, Opportunity for Demonstrating Low Cost and Efficiency of Natural Gas

WHEN natural gas was sold at a comparatively few cents per thousand cubic feet, and when the volume was so great that it seemed almost inexhaustible, and when gas companies were themselves burning great volumes of gas without any consideration whatsoever as to the outcome, it was not to be expected that these gas companies could have any effective competitor. Therefore, all that seemed necessary was for the gas company to hand out the element, leaving to plumbers, merchants, and whoever would sell the appliances, good, bad, or indifferent.

Since gas has narrowed down, and is narrowing down, gas companies are finding it not only advisable, but in many cases absolutely necessary to themselves handle gas appliances as they are handled and have been handled for many years by manufactured gas companies.

With higher rates being charged for gas, the tendency on the part of the gas buyer is to "shop." Think of it recently in a natural gas community, the writer was asked about electric ranges, believing that he might know somewhat of that subject. The inquirer had been convinced that, should the commission then hear of a gas company's request for a very considerable raise in gas rate, agree to it, an electric range would be more desirable from various standpoints, the details of which we will not enter upon. This inquiry was made were a feather indicating in which direction the wind might be blowing; in fact, was blowing then and there, showing that the gas company must take a more direct hand in the details of the business than in the past.

will an article in a competitive field means real commercial ability not only, but it means concentration of purpose and intent. Therefore, as the natural gas field is becoming more and more a competitive field, the gas companies are finding it necessary to go before the public "commercially" in behalf of gas appliances. Not only these and the products of other fields, but solely in behalf of gas. Not offering oil stoves, oil cooking ranges, electric ranges, electric heaters, gas or gas gas heaters, etc., as does the merchant, but with one purpose, that of selling gas, and as a means to that end, appliances that shall keep the gas user on the side of the gas company rather than allow him to pass to an alluring competitor.

Service is a thing that nowadays is commanding an enormous amount of attention and is being discussed to our advantage in many lines of trade. A gas company

is often spoken of as a *feature* of service. If this term, however, correct. Should the gas company not be a *guarantor* of service, to make especially valuable to its customer the product that it sells, and the appliance that it also sells or should sell for the purpose of inducing the use of its product after the best and most satisfactory fashion?

The Peoples Natural Gas Company of Pittsburgh is a merchandising concern; it is one of the leaders in the field of selling gas appliances for natural gas use. The company has high grade talent in its commercial department. Mr. E. B. Ivory is Commercial Manager, a man of ability and excellent judgment. Assisting him as Assistant Commercial Manager is Roy J. Sullivan.

The show room of the Peoples Company is well stocked with gas appliances of as great excellence as can be found in either of the fields. The ranges are of the same high type, and in many instances are of the same make as those that for years have served the discriminating manufactured gas field. The same applies to space heating appliances of the radiant and reflector types, etc., etc.

In the old days of natural gas, "Everything goes" was the principle. In these days with such discriminating companies as the Peoples Natural, the Logan Natural, the Union Natural, the Ohio Fuel Supply Company, the East Ohio, the Ingersoll Natural, and many other companies who are selling and displaying gas appliances, "Nothing goes but the best." It is an era of better appliances, better service, better selling methods, better everything in the natural gas field.

The results of the first Manufacturers Gas Company survey, the first attempt to install the new, with modern gas appliances, in a new house, a modern new house. Here a gas board house was prepared for a large party. The modern new house is a first of its kind.

The first of the two agents involved was the informant who stated that he had been contacted by the person who started the company in the summer of 1967. The informant was the owner of the company at that time and was located in the area of the city.

As the number of people in the world grows, the demand for food grows. The demand for food is growing faster than the demand for any other commodity. The demand for food is growing faster than the demand for any other commodity. The demand for food is growing faster than the demand for any other commodity.

There is no great achievement that is not the result of patient working and waiting —Titcomb.

to audiences in a number of the states in behalf of the Manufacturers Gas Company, and its affiliated interests.

The mayor of Bradford was present, the clergy was represented, and laymen by the score. Among the speakers were Mayor De Golier, the Rev. David L. Hickrey, LL.D., Rev. F. D. Miller, Ph.D., Hon. R. P. Habgood, late Mayor H. H. North, T. J. Buck, Hon. Rufus Barrett Stone, and F. D. Gallup.

It will be noted that everything was carried on with decorum since we are informed that "Grace" at the table was pronounced by Rev. Irvine Linds.

The Mayor spoke on the topic, "What Gas Means to a Community", a subject that really is a fundamental and one that is infrequently found on programs. There seeming to be a lack of appreciation of the fact that this is a topic which should have careful and thoughtful attention and be brought to the fore, in order that due appreciation of all that it stands for should fall like a mantle upon the community.

Harking back to the old days, Mr. A. R. Johnson used as his topic, the advent of this resource in Bradford where gas has served the community for many years.

The negative side was discussed by Mr. F. D. Gallup, who took as his subject "What It Would Mean, to be Without Natural Gas." Right here we would stop a moment to say that if communities were brought fully to understand "What it would mean", they would promptly give unbounded consideration to the subject of "How May We Lengthen the Life, Continuing the Usefulness to the Community of This God-Given Supply?"

Quite naturally the Rev. Mr. Hickey viewed the matter from the "blessings" standpoint. His subject was, "Our Obligation for Natural Blessings, and the Need for Using Them as They Were Intended, and Not in a Prodigal Manner".

Hon. R. P. Habgood introduced three phases in his address, under the title of "The Public, the Utility, and the Need of Publicity".

We understand that Mr. Habgood is a man who values publicity as one of the main factors in creating public sentiment, realizing that the latter is the undisputed short-cut to good understanding between the public and the utility.

Col. F. P. Schoonmaker handled the topic of "Utility Regulation and Control", he setting forth phases in his subject which were possibly formerly not fully understood by all, indicating that "Regulation and Control" did not mean the taking away of rights, but the protecting of rights, be those rights on the side of the utility or of the public.

A pleasing brief address by Mr. H. H. North followed the announcing of the subject "Co-operation Between the Server and the Served, an Ideal Relation". One can readily for himself imagine the trend of these remarks, the idea being a basic one, the foundation of the idea of Socialism, not Socialism as known in a Socialist party, but the true man-to-man and brother-to-

brother idea, that if practiced would bring about unlimited comfort and prosperity.

It would be unjust and unfair to those of the field, the men who physically bear the heat and burden of the day, and the chill and cold of the night, to have nothing said of "Labor's Part in the Development of Natural Resources". This subject therefore took form in the remarks by Mr. T. J. Buck.

The man in the field is to us always a wonder, the question invariably arising when we learn of great tasks undertaken and executed, "How could these men have done it, how could they have stood the cold, how could they have stood all kinds of inclement weather, and yet smile?" The old-time saying, "We must cut our coat to suit our cloth", became the title for remarks by Hon. R. B. Stone, who discussed organizations, mergers, development, etc. Mr. Stone was received with marked limited comfort and prosperity.

Swinging over into the field of "Industrial and Commercial Advantages of Natural Gas", the Rev. Dr. H. Miller of Bradford set aside all churchly visions and entered heartily into his subject as indicated by its title, proving that a "Reverend" may also be a man of keen commercial insight.

Mr. Parkinson acted as toastmaster and excellently well introduced the several speakers. The object was that of educating the public to the need for conserving gas while indicating how excellently well, and with how little gas a clever meal may be prepared. Those present had visible evidence before them and in them.

Among the gas companies that quite recently have come into the fold of gas-appliance-sales, is the Iroquois Natural, of Buffalo. This company has for a long period conducted an exhibition room wherein many types of gas appliances have been shown, most of them coupled with service lines, that they might be demonstrated. This work has been under the control of Mr. J. McK Reiley, who somewhere since became also Purchasing Agent for the Company. The plan formerly was to exhibit the various appliances, each with a card upon it indicating what merchant in Buffalo handled that particular appliance. More recently, however, and quite within the recent past this department has become an appliance sales department, and now the public of Buffalo will have the opportunity of buying at the gas company office, rather than being referred by the gas company to some merchant. We anticipate that one by one the natural companies will adopt this method quite in line with the workings of the commercial departments of the manufactured gas companies of the United States.

EXTENSIONS OF SERVICE

THE Public Utilities report, dated November 10th, 1921, contains data that would be exceedingly useful to any gas company confronted with the problem of main extension. There is in the report an excellent editorial, covering the principles which have been established by courts and commissions. A large number of case references are given.

Some men work hard, while others only work soft marks.

MECHANICAL COST ACCOUNTING

BY C. W. FLEET

EVERY utility man has frequent need for recourse to the cost analyses of his department of the business, and by the study of such analyses is better able to perform his own duties, whether they be operating, selling, financing or otherwise. A good accounting staff is like the lubricating oil of an engine. It may be non-productive, but it pays to use a good grade.

Almost any kind of a record is good enough to file away on the dust-gathering shelf of your vault, but the record that will save you money is the one that enables your operating man to know clearly and promptly what it has cost him to operate. Thus he should know from day to day, and in such form that operating inefficiencies may be detected and eliminated.

Properly costs are of course imperative, and a cost system which does not find its ultimate result in the regulation of a continuous inventory of fixed capital leaves half the task unfinished. A company which does not know and cannot with facility demonstrate the nature and value of its operating capital is helpless in its own defense at times of rate fixing.

This article is of necessity an abridgment of the subject of cost keeping. It deals only with a few features where certain machine operations have been used to advantage, through a discussion of the origin and distribution of direct charges.

Time tickets are originated by the several sections of the Operating and Construction Departments. These are made in duplicate. They are completed in every detail by the clerks in the several bureaus, showing thereon the name and number of the employee, date, brief description of the work, the number of hours charged to each account and job order worked upon, and the amount of charge therefor. The original is sent to the paymaster, who verifies the rate of pay and total amount before crediting the employee's account. The duplicate is sent to the Cost Bureau.

This time ticket should be arranged in sections. No section is to be used to record charges to more than one primary account, although more than one sub-order may be recorded therein, if under the same account. The duplicate tickets should be printed on heavy paper and after being received by the Cost Bureau the sections are punched out and sorted by accounts.

For every requisition for materials, regardless of the amount, one account should be drawn in triplicate. All three copies numbered by the clerk, one of the triplicate is returned to the workman. The original and duplicate should be forwarded to the stores accountants, where, after being priced, the original returned and the duplicate sent to the Cost Bureau.

Freight or delivery tickets, such as covering charges on more than one account, are forwarded direct to the Cost Bureau, where the schedule of rates is applied to the amount of service rendered, and the charges thereon

Distribution. The next step is the distribution or recapitulation of the above tickets to primary accounts. This in a well equipped gas office is done with the aid of an adding machine equipped with two counting mechanisms and having keys to register the date and reference number of the entry. Each group of charges being taken up separately. A distribution sheet should be prepared for each account. These sheets should be bound in loose leaf end back binder and during the posting operation are released and set in a posting tray. The advantage of having the tickets to be distributed arranged by accounts is now plain. Pay roll supplies and cartage are posted and proved separately. Each is handled in the following manner. The date, ticket number, reference and amounts are listed and as each account is completed the total of the day's postings thereon is drawn down on the first counter of the machine, which is automatically cleared to the second counter or grand totalizer.

By repeating the daily total for each account and picking up the cumulative total for the preceding days it is possible to keep an accumulated total for each account so that when the last day's work is added, the monthly distribution is complete and ready to be transferred to the general ledgers.

The next step is the distribution of secondary accounts, i. e., construction and job orders. The record should be kept on sheets. These are bound in a loose leaf end binder to facilitate their handling during the operation of posting. The posting done on a typewriter, with columnar and total roller attachments. By this means the daily postings are proved, and the printed column reflects the total posted on each order.

There is unquestionable merit in a method like the above, where the proof of postings is obtained as the entries are made.

By routing the tickets back to the source

INCREASED WINTER GAS RATE

By degrees we are learning many new things, among them that the increased rate for increased natural and manufactured gas being sold will be a very small factor in winter months. We have the upward sliding scale, we have the service charge and multiplier, other extras, but for the business which runs on a normal plant in the hands of the Housewife, the rate compared to the City Council, where it may at times be more than doubled in winter. However, the high rate for gas being sold in winter in the winter of last year, with the low temperature, has led to a degree of saving gas, which might have been a more definite factor in the winter.

The gas companies are now looking for a gas shortage in the winter of 1934. The City Council, having the same view, is now looking for a gas shortage in the winter of 1934. The gas companies are now looking for a gas shortage in the winter of 1934. The City Council, having the same view, is now looking for a gas shortage in the winter of 1934. The gas companies are now looking for a gas shortage in the winter of 1934. The City Council, having the same view, is now looking for a gas shortage in the winter of 1934.

Patience is the chiefest fruit of study. Seldon.

NATURAL GAS GASOLINE

An Accounting of the Volume of Output in the United States in 1920.

THE term "natural-gas gasoline", as used by the United States Geological Survey, means gasoline recovered by all methods from both "wet" and "dry" natural gas and is synonymous with "casing-head gasoline" and "natural gasoline", terms used in the trade. The Association of Natural Gasoline Manufacturers, soon after its organization, proposed the term "natural gasoline", which is now being generally used, but the United States Geological Survey considers "natural-gas gasoline" the more appropriate term.

Production

The output of natural-gas gasoline continued to increase in 1920 and exceeded that made in 1919 by 31,776,791 gallons, or 9 per cent. as compared with an increase of 24 per cent. in 1919, according to E. G. Sievers, of the United States Geological Survey, Department of the Interior. The figures for 1920, however, are subject to revision. The average daily production of natural-gas gasoline in 1920 was 1,050,170 gallons, as compared with 963,110 gallons in 1919.

Natural gas-gasoline is recovered from natural gas by two distinct methods, the compression method, which includes also refrigeration, and the absorption method. About 73 per cent. of the output in 1920 was produced at the compression plants and the remainder at the absorption plants. The compression method is applied to the "wet" gas, which contains more gasoline. The absorption method is used in treating "dry" gas, which contains only a small proportion of gasoline vapors—less than a gallon in a thousand cubic feet of gas. As dry gas can not be treated successfully by the compression method the absorption method was devised and is being used with good results.

The total quantity of gasoline produced in the United States in 1920 was 5,133,435,658 gallons. Of this quantity 4,750,123,841 gallons, according to statistics compiled by the Bureau of Mines, was obtained from crude petroleum, and 383,311,817 gallons, or 7 per cent. of the total, from natural gas. The annual output of natural-gas gasoline averages between 7 and 8 per cent. of the total annual gasoline output in the country. This percentage in itself is small, but as natural-gas gasoline has a high volatility, it is blended with refinery products, such as naphtha, and is therefore a means of utilizing these blending materials which otherwise would have less value.

The value of the total output of natural-gas gasoline in 1920, as computed from the prices received at the plants, increased \$7,337,355. The value of the gasoline produced by the compression method increased \$4,509,541 and that produced by the absorption method increased \$2,827,815. The average price was approximately the same in 1920 as in 1919—18 cents a gallon for the total output of 17½ cents for compression gasoline, and 20½ cents for absorption gasoline.

The volume of natural gas treated in 1920 was 15,-

479,737,000 cubic feet greater than that treated in 1919. The volume treated at the compression plants in 1920, however, was 5,089,797,000 cubic feet less than that treated in 1919. Although less gas was used at the compression plants the production increased, indicating an increase in the yield during the year. This increase in yield was due either to a greater gasoline content of the gas treated or to a greater efficiency of the plants, or to both. The volume of gas used at the absorption plants in 1920 exceeded that used in the previous year by 8,375,199,000 cubic feet. The average yield of natural-gas gasoline per thousand cubic feet of gas was 0.042 of a gallon greater in 1920 than in 1919.

The output of natural-gas gasoline in 1920 was made by the same 12 states as in 1919. The outstanding feature was the remarkable gain by Texas, which increased its production 253 per cent. The output increased in all the states except Oklahoma, Illinois, Kentucky, and New York, where it decreased. Production in the following states increased by the percentages given: Texas, 253; Wyoming, 56; Kansas, 31.98; California, 19; Ohio, 13.8; West Virginia, 12.9; Louisiana, 5.4; and Pennsylvania, 4.3. The states in which production decreased are Kentucky, 12.4; New York, 10.2; Oklahoma, 5.6; and Illinois, 0.1 per cent.

LOW PRESSURE NATURAL GAS BURNERS

REPORTS by M. P. Youker and G. S. Brewer, of the Bartlesville (Oklahoma) Station, have been completed on the "Use of low-pressure gas burners in oil-field boilers", giving complete results of tests made with eleven low-pressure gas burners in an experimental boiler. The investigation has shown that low-pressure gas, vast quantities of which are now being wasted, can be successfully used to generate steam for drilling purposes. Results of the work show that the multiple Bunsen type of burner is the most satisfactory type tested. For any given gas pressure the capacity of a gas burner will depend on the number and size of gas jets used. The report is being prepared for printing by the Mid-Continent Oil and Gas Association of Tulsa in its Year-book. Write for an advanced copy. Ask of M. P. Youker of Bartlesville, Okla., Station.

GAS AND OIL RESULTS

AT Mexia, Tex., the Danciger Development Syndicate, a subsidiary of the Danciger Oil & Refining Company of Kansas City, Mo., one of the major oil companies, struck a well, making an initial production of 5,000 barrels daily, on their Koenig lease in northeast sector of the Mexia field.

The oil and gas pressure was so great that the well unexpectedly blew itself in before M. O. Danciger, who was preparing to drill it in, could do so. One hundred twenty-five men were used by the Texas Pipe Line Company to connect their flow lines to this well before it drilled itself in.

Human thought is the process by which human ends are ultimately answered.—Webster.

Candy Gas-Fired Furnaces

*A Plan for Selling Only the Best That We May
Hold the Trade*

BY JAMES BEVERIDGE

In the last few years the candy industry of this country has increased to a very great extent and gas as a factor can claim a deal of credit in the success of this industry.

Under the confectioners' trade, especially the manufacturing end, it is very essential that one reckon with speed in operation; this means saving costs and increase in output.

In order to obtain this result, combustion of our fuel must take place at a high rate. This is being accomplished in the Blast type of furnace. However, before we consider the Blast Burner, we will consider the Atmospheric Burner which is familiar to most gas men.

Essential parts of an Atmospheric burner are the orifice into which the gas enters and from which it flows through the Cocks from there to the Air Inlet which has a gas orifice at its end, consisting of a tube with a hole in it.

As most men in the field know, the gas flowing through the hole in the spud has its velocity greatly increased and by this means entrains air through the Mixer. Mixer Pipe the mixture of air and gas then flows to the Burner Head where it is consumed.

Atmospheric Burners having a capacity of 150 cubic feet to 300 cubic feet are very suitable for Candy Furnaces.

Explanation of Atmospheric Burners will enable you to understand the Blast Burner and the importance of a Blast Candy Furnace better than if we outline a given.

In the case of the Blast Burner, air enters directly into the Mixer through a cone shaped nozzle. This increases its velocity causing a partial vacuum at that point. Gas enters via a Mixing Tee at right angles at this point and the vacuum formed by the air nozzle draws in the gas mixed with the air. Thus it will be seen that the Blast Burner is just the reverse of the Atmospheric Burner. In the case of the Blast Burner, air enters at a high pressure and velocity, while in the case of the Atmospheric Burner, the gas entrains the air but at a low pressure and velocity.

In the case of the Blast Burner, the gas entrains the air but at a low pressure and velocity, while in the case of the Atmospheric Burner, the gas entrains the air but at a low pressure and velocity.

In the case of the Blast Burner, the gas entrains the air but at a low pressure and velocity, while in the case of the Atmospheric Burner, the gas entrains the air but at a low pressure and velocity.

Speed in candy making, as I have said, is very essential. It not only produces a clearness of hard candies, a better product, but is more efficient, as I have also said, producing a saving in labor and increases in output.

The methods of supplying air to Blast Furnaces are by the Fan-Blower and Positive-Pressure Blower. Fan-Blowers are considered the best as they supply sufficient air for candy cooking and can be operated at a lower cost than the Positive Pressure Blower.

The Positive Pressure Blower is only desirable where air at one and one half pounds pressure is already available or where the consumer demands it. A Positive Pressure-Blower requires about one horse power, while the Fan-Blast requires about one tenth horse power.

Summing up, therefore, the Fan Blast type of furnaces are the most desirable for most purposes due to their great speed, low cost of operation and their convenience, simplicity, durability and economy.

Motor Blowers are made so as to operate with 110 and 220 alternating and direct current. They are directly connected and should be installed close to furnace with as few bends as possible to avoid resistance of air supply.

Candy furnaces should be designed to eliminate as much loss of heat by radiation as possible.

The best method of installation is by utilizing the flow gases from the furnace which pass from the fire pot into the circular flue and out the chimney. The correct style of furnace is so constructed that the products of combustion must travel around the furnace before entering the chimney thus making the flame come up evenly around the kettle instead of being drawn to the side where the chimney is located.

The shape of the fire pots should always be such as to reflect the heat of the flame against the kettle. Fire pots should be heavily lined with refractory brick or properly designed insulation to reduce the loss of heat to a minimum. Proper insulation not only saves gas consumption but is more economical for the candy maker.

Approved furnaces are equipped with bellows, allowing the furnace adaptable to all sizes of kettles. The object is to hold a small kettle close to the flame so that the same economy can be obtained as with the larger kettles.

The Fan Blast type of Candy Furnace is considered to be the standard appliance in the best candy houses and can take the place of coal or oil furnaces at a material saving.

Every man is the architect of his own fortune. Watson

While the Blast Furnace holds first place among equipment of large candy manufacturers, the Atmospheric Furnace is the best appliance for the retailer or small manufacturer. Each has its place to fill.

While the Atmospheric Burner Furnaces are not so rapid as the Blast Furnace, they are ideal for small manufacturers, and a good Atmospheric Furnace is much faster than coal or coke and above all things, is clean and sanitary.

Studies are being made by manufacturers of electric appliances to perfect an electrically fired confectioners' furnace, but from all information that can be gathered, they will not hold a candle with gas furnaces. However, the mere fact that electric men are endeavoring to encroach on the gas field, should cause we gas men to exercise every effort to see that nothing but the best gas appliances are used.

—By courtesy of Pacific Coast Gas Association.

The Industrial Field

The Sale of Gas Furnaces—"Service," and Experience on Salesmen's Part, Important

BY JOHN B. REDD,

Industrial Fuel Engineer, Beacon Light Company

Mr. Redd brings to the attention of those who are earnest in their desire to push forward, the need for knowledge of the arts of heat-treating with gas, and advises a thorough study of the subject.—EDITOR'S NOTE.

THE sale of Gas Furnaces for heat-treating steel and forgings should be considered more on the basis of selling service, rather than taking an order for so much merchandise, on which a certain percentage of profit is made. It is not the sale of the furnace which is going to make a success of the installation, but the actual service rendered after the furnace is in operation.

Service means more than an occasional call by a gas fitter to see that the furnace is being operated satisfactorily and the burners are properly adjusted. The confidence of the user should be held to the extent that he will telephone the industrial department when any change is considered necessary as to temperature, burner adjustment, and repairing of the furnaces, or if it is desired to heat treat a different grade of steel than that which is being worked upon. If such information is requested by the user from the industrial department, there cannot be anything except a close friendly feeling between the user and the company which is selling him the fuel.

The heat-treatment of steel covers an extensive field; every observing metal worker learns something new regarding his work almost every day. Perhaps what is new to one, may be old to other metal workers for seldom do we really discover that which someone has not known of or perhaps put into actual practice many years before.

Generally steel is divided into two classes, and commonly referred to either as carbon steel or high speed

steel. Low carbon steel is soft and cannot be hardened for cutting purposes, while an increase of carbon content not only makes for greater cutting endurance, but does not warp and crack easily, it is of finer fracture, and offers more resistance to machining.

The metal worker must be able to select the right kind of steel to be heat-treated for a particular purpose, keeping in mind at all times that the heating is the most important operation to insure a satisfactory finished product.

The heat-treatment of steel is usually considered under different headings, such as forging, which takes in many and varied lines of work; tool making; tool dressing; the manufacture of many parts of automobiles and hundreds of parts for other kinds of machines. Then we have drop forging, which is really machine blacksmithing. The products of the drop forging industry are now used in a great variety of the mechanical arts.

Drop forging was developed about 1853 when Col. Samuel Colt adopted the process and needful machines to make parts for fire-arms. This method has shown a marked advancement within recent years, and many wonderful operations are being done with the combined use of the drop hammer, properly treated steel dies, and modern gas furnaces. Practically all cutlery is produced by drop forging while razor blades are made in the same manner, afterwards forged down by hand to the rough size, then stamped and hardened and ground to the proper size and shape. Even in grinding, great care must be observed in order not to heat the steel so hot as to draw the temper, which gives an idea as to the care necessary in the heat-treating of steel parts.

Steel of 1.5% carbon content is suitable for planing tools, drills, razors, etc. It is spoiled if over-heated and the maximum working temperature should not exceed 1,450 degrees Fahrenheit. The temperature at which

It is easy to get rich after you have the first million.

[illegible][illegible]

the 1990s, the number of people in the world who are illiterate has increased from 1.2 billion to 1.5 billion. The number of illiterate people in the world is projected to reach 1.7 billion by the year 2015. The number of illiterate people in the world is projected to reach 1.7 billion by the year 2015. The number of illiterate people in the world is projected to reach 1.7 billion by the year 2015.

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[illegible]

the 1990s, the number of people in the world who are undernourished has declined from 1.1 billion to 800 million. The number of people who are malnourished has declined from 1.5 billion to 1 billion. The number of people who are obese has increased from 100 million to 300 million. The number of people who are overweight has increased from 100 million to 300 million. The number of people who are obese and overweight has increased from 100 million to 300 million. The number of people who are obese and overweight has increased from 100 million to 300 million.

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as principles find their proper issue in the faithful performance of little duties -- Farrar

DESTRUCTION BY SELF-CORROSION

Self-Corrosion Not Stray Current Electrolysis, Shown at Selkirk, Manitoba

Jnl. A. I. E. E., A. G. A. Abstract

EVIDENCE has been gradually forthcoming, from a number of independent investigators, that cast iron pipe is not the indestructible material that it was formerly supposed to be by engineers; and the recognition of the possibilities of self-corrosion by responsible engineers and chemists ought to have considerable bearing upon the numerous controversies respecting damage to water pipes, gas pipes, and lead cables, which is usually charged against stray current electrolysis from electric railways, if there is a railway near enough to receive the blame for the damage.

A perplexing feature that sometimes arises in an electrolysis situation, is the persistence of pipe corrosion, at spots well removed from the pipe joints, in areas where the pipes could not have been electrically positive to the surrounding earth. When the soil carries electrolytic salts in solution, self-corrosion is easily possible, in places where stray current electrolysis could not happen.

The facts that are now being brought to light about the possibilities of self-corrosion, coupled with the availability of recently devised methods for determining conclusively whether a pipe is positive or negative to the earth, will enable electrolysis situations to be handled in the future on a basis of proved fact instead of prejudice, fear or conjecture; and professional electrical engineers, called into electrolysis situations, will do well to bear this in mind.

The following investigation of a case of chemical corrosion of iron pipe is reported by W. Nelson Smith, consulting electrical engineer of the Winnipeg Electric Railway Co.

A party of professional chemists and engineers from Winnipeg made a personal inspection of a six-inch water main, about 100 feet of which had been recently exposed in the course of excavating for the pipe tunnel between the new Selkirk hospital and the boiler house.

As the water supply system of the hospital is secured from wells drilled on the property to a depth of 250 to 300 feet, and the piping system is entirely separated from the Selkirk water supply, and as the hospital is more than half a mile from the western outskirts of the town, and not less than 1¼ miles from the northern extremity of the Selkirk trolley line, it was said to be quite outside any possible path of stray current from the electric railway. The only electric current on the property is a 60-cycle alternating current for lighting, and the United States Bureau of Standards, it was pointed out, had proved by exhaustive and long-continued experiment, that it was impossible for an electric current of this character to cause destructive electrolytic action on buried metal structures.

The pipes examined, although they had not been laid for more than eight years, were shown to be affected by some corrosion of the cast iron, well advanced in many spots, not only near the joints but in the middle of the pipe.

The progress of corrosion was observed in its various stages, and the corroded metal in the pits eaten into the pipes was similar in appearance to the products of corrosion observed on damaged water pipes in Winnipeg. All such damage, wherever it had happened in the city, it was stated, had always been attributed solely to electrolysis from stray currents leaking from the electric railway tracks.

The presence of soluble salt crystals in considerable quantity was also observed by all the party on clay freshly excavated from the new trenches in the street in front of the hospital. The similarity of this clay and its salt content, to the clay and its contained salts as met with all over Winnipeg and vicinity was remarked upon by all present.

This water pipe had thus been imbedded in earth containing salts that are known to be chemically active, and further, by reason of its location, had been entirely free from access of stray direct current, which can only dissolve the metal where it leaves a buried pipe to enter the surrounding earth. Stray current electrolysis and therefore, admitted to be impossible under the circumstances.

The only inference that could be drawn from the facts noticed by the party was that the observed corrosion could only have been caused by the chemical activity of the solutions of the so-called alkaline salts.

It was further pointed out that it had also been recognized for several years past, by practising civil engineers, and more recently by public authorities and the public generally, that these alkaline salts, the sulphates, chlorides, carbonates and bicarbonates of magnesium, calcium and sodium, which are widely distributed through the soil of western Canada are very corrosive to concrete made of Portland cement, no matter how carefully the concrete is mixed and deposited.

METER TAMPERING

Electrical World, A. G. A. Abstract

WHILE utilities have an undoubted right to cut off service to patrons who misuse or abuse it, the Pennsylvania Public Service Commission has declared, the charge of tampering with a meter is too serious to be sustained except upon clear and satisfactory proofs. In a case where such proofs were not sufficient to convince the commission, gas service was ordered restored. The Utah Public Utilities Commission ordered a consumer whose electric meter had been tampered with, but not, according to the consumer, with his knowledge or approval, to install protective devices on penalty of discontinuance of service.

A man is sometimes his own worst enemy, but he is more likely to be his own best friend.

DATA ON NATURAL GAS

11. Bureau of Mines, Department of the Interior, the Smithsonian Institute, the U. S. Bureau of Standards, the Department of Home Economics, Ohio State University, and Dr. George Levy, State Geologist, Harrisburg, Pa., have been willingly open-handed in the preparing and publishing valuable data and helpful suggestions in behalf of natural gas interests of the country, and of the service by the natural gas companies of the United

States. The following is a list of the available free leaflets and booklets that may be had for use in the earnestly informing the public regarding natural gas, its usefulness, how it may be conserved while yet so scarce, communities in a more efficient manner, or much pleasure in publishing the following list: Catechism on Natural Gas—32 pages containing questions and answers, prepared especially for Home Economics workers for teaching correct use of natural gas in the home.

Waste and Correct Use of Natural Gas in the Home—Technical Paper 257, U. S. Bureau of Mines, is discussing different forms of waste and points out how to use natural gas correctly.

Present Natural Gas Situation—One-page graphed statement of the U. S. Bureau of Mines, dated June 25, 1920.

Resolutions Adopted by National Committee on Gas Conservation—6 pages giving 36 recommendations for coping with the declining natural gas supply, dated June 11, 1920.

Standard Institution Bulletin 102, Part 7, on Natural Gas, by the Production Service and Conservation Service, 16 pages giving the high points of the whole gas situation.

How Natural Gas is Found, Reduced to Pressures, Compressed and Delivered to Ultimate Consumers, and picture of natural gas model in Smithsonian Institution.

U. S. Bureau of Standards' pamphlet on "How Better Service With Less Natural Gas in Domestic Appliances"—7 pages showing how better service is secured at low pressure rather than at high pressure.

Kitchen Tests of Relative Costs of Natural Gas, Coal Oil, Gasoline, and Electricity for Cooking—Department of Home Economics, Ohio State University, Bulletin 102, 14 pages with several illustrations giving results of tests.

Use of Natural Gas in the Home—McKeesport Courier—4-page statement showing what has and why is needed, \$2,000,000 worth.

Manufactured Gas and Natural Gas Situation in Pennsylvania—16-page pamphlet discussing the gas situation in the state from a resource viewpoint.

Map showing Manufactured Gas and Natural Gas in Pennsylvania—1920, 1921, 1922, 1923, 1924, 1925, 1926, 1927, 1928, 1929, 1930, 1931, 1932, 1933, 1934, 1935, 1936, 1937, 1938, 1939, 1940, 1941, 1942, 1943, 1944, 1945, 1946, 1947, 1948, 1949, 1950, 1951, 1952, 1953, 1954, 1955, 1956, 1957, 1958, 1959, 1960, 1961, 1962, 1963, 1964, 1965, 1966, 1967, 1968, 1969, 1970, 1971, 1972, 1973, 1974, 1975, 1976, 1977, 1978, 1979, 1980, 1981, 1982, 1983, 1984, 1985, 1986, 1987, 1988, 1989, 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 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NATURAL GAS GASOLINE

IN casting your eye down these columns, think back but a short while and if you are a field man you will mentally see gasoline pouring down the hillsides, turned loose in order to "get rid of the blamed stuff". Read the dollars and cents figures and then gasp because of what memory brings back to you.

Note this classification of natural-gas gasoline by principal methods of manufacture.

GASOLINE PRODUCED BY COMPRESSION AND BY VACUUM 1920

State.	Plants.	Gasoline produced.		Aver. price.	Gas used.	
		Quantity.	Value.		Estimated volume.	Aver. yield.
		Gallons.		Cents.		Gallons.
Oklahoma	266	162,761,829	\$28,233,143	17.34	48,363,205	3.37
California (a)	44	35,347,691	6,619,893	18.72	27,856,279	1.27
Texas	35	30,144,880	5,272,276	17.48	10,098,420	2.99
West Virginia (b)	163	15,972,833	3,169,859	19.84	11,605,174	1.38
Pennsylvania	279	10,981,461	2,128,774	19.38	5,391,467	2.04
Wyoming	4	8,175,825	1,609,762	19.68	2,345,048	3.49
Louisiana	18	6,077,093	831,086	13.67	1,917,159	3.17
Illinois	92	6,054,916	1,307,980	21.6	2,889,334	2.10
Ohio	47	2,294,996	466,747	20.3	916,075	2.51
Kansas	7	1,574,482	315,906	20.1	780,820	2.02
Kentucky	6	182,927	41,997	22.95	254,091	.72
New York	4	411,078	75,576	18.38	162,463	2.53
Total, 1920	965	279,980,011	50,072,999	17.88	112,579,535	2.486
Total, 1919	1,025	261,157,587	45,563,458	17.4	117,669,332	2.22

(a) Includes 4 combination compression and absorption plants.
(b) Includes 7 combination compression and absorption plants.

GASOLINE PRODUCED BY ABSORPTION IN 1920. (a)

State.	Plants.	Gasoline produced.		Aver. price.	Gas used.	
		Quantity.	Value.		Estimated volume.	Aver. yield.
		Gallons.		Cents.		Gallons.
West Virginia	48	42,968,655	\$9,879,692	22.99	162,714,884	.26
Oklahoma	46	14,662,995	2,847,347	19.41	36,257,061	.40
California	26	12,860,285	1,703,926	13.24	15,916,116	.81
Pennsylvania (b)	27	10,169,674a	2,253,606	22.16	55,560,230	.18
Ohio	12	7,720,642	1,727,811	22.37	39,299,254	.20
Louisiana	13	4,532,536	881,527	19.4	35,836,884	.13
Kentucky	3	4,314,393	1,029,631	23.86	18,685,194	.23
Texas	7	2,811,148	498,533	17.73	5,753,793	.49
Kansas	3			18.6		.25
		3,291,478	639,047		13,280,749	.22
Wyoming	1			23.55		
Total, 1920	186	103,331,806	21,461,120	20.76	383,304,165	.269
Total, 1919	166	90,377,439	18,633,305	20.6	374,928,966	.24

(a) Includes drip gasoline.

(b) Includes 1,650 gallons of drip gasoline, valued at \$240.00.

Note in the table of compression plants that there were in 1919 1,025 plants while in 1920 there were only 965 plants. Yet nearly 280 millions of gallons were produced by these fewer plants, versus a little over 261 millions gallons by the greater number of plants in 1919.

IN OLD KENTUCKY

WE have before said of Donald McDonald of Louisville, Ky., that he is a man with large measure of intellect, a possessor of excellent judgment; that he is a leader among men. He evinced these traits when recently before the Public Utilities Association of Kentucky, he brought the following to the attention of its members. His idea is unity of not only purpose, but of action as well in behalf of one another in the utility field. Mr. McDonald said:

"Why is it that we are subject to attack more than any other business? Is it because we are lacking in the herd instinct? A bunch of cattle in the presence of danger has sense enough to gather into a compact knot and present an unbroken ring of horns to the wolf or the dog that would pull down one of their number.

"When the proposition came up in this city to reduce telephone rates, I found many in our organization who

figured that if they could get fifty cents a month off of their telephone bill it would be that much more for going to the moving picture shows. I didn't find many that considered if that treatment were started as to the telephone companies, the gas and the electric companies might be the next to which it was applied and that they might lose a job or have their wages reduced. Not only that, but every holder of our securities, whether stocks or bonds, should have thought of it.

"When the Interstate Commerce Commission eight years ago turned down the request of the railways, how many of the other utilities came forward with the idea that that was not fair and if it is done it will be applied to us sooner or later? They were thinking that if we can save twenty-five cents a ton on our coal our balance sheets will look a good deal better. In other words, they were looking out for immediate matters and paying no attention to what was in the future.

"Where ever an unjust measure is proposed against the smallest company in the United States, they should have the employees and stockholders and the bond holder of every railroad, every gas and light plant and every public utility in the United States back of them, because they are all public utilities depending for the breath of life upon fair treatment and in an endeavor to obtain that for utilities we should all be united."

GAS CONSUMPTION AT UTILITY PLANTS

THE following columns of figures will give one an excellent idea of the comparative volume of fuels used by utilities during the various months throughout 1921. The table of figures was prepared under A. H. Horton of the Bureau of Mines.

	Tons	Bbls.	M. Cu Ft.
	Coal	Fuel Oil	Gas
January	2,984,154	897,088	1,707,413
February	2,629,563	781,436	1,464,682
March	2,641,588	848,866	1,548,664
April	2,416,579	843,193	1,853,783
May	2,415,009	853,519	1,994,126
June	2,434,349	916,088	2,068,248
July	2,453,945	1,026,568	1,929,148
August	2,572,569	1,145,935	2,329,609
September	2,586,033	1,179,250	2,381,628
October	2,758,774	1,181,457	2,279,880
November	2,778,860	1,145,184	2,214,282
December	2,893,380	1,193,298	1,974,827
The year	31,564,812	12,015,882	23,746,290

SPRAGUE WAREHOUSE IN OHIO

The Sprague Meter Company of Bridgeport, Conn., is opening a warehouse at Newark, Ohio, thus to best and most conveniently serve the Ohio trade. Quick shipments can be made from the new warehouse to points within the zone that this new service is to cover.

At Bridgeport the company has purchased two brick buildings adjoining the factory, thus adding buildings-area which will, when remodelled, become extensions to the company's already large and well arranged factory.

Our antagonist is our helper. Burke.

Manufactured and Natural Gas

*The Gas Situation in the State of Pennsylvania is Well Described in a Co-ordinated
Article Treating of the Two Great Phases of Gas That
Serve Our Cities*

W

ITH a desire to make the peoples of Pennsylvania better acquainted with the gas situation in their state, and that they might, even though superficially, yet more fully understand the means whereby manufactured gas is produced, and natural gas harnessed for public good, there has been proposed with the approval of Dr. George H. Ashley, State Geologist of Pennsylvania, and jointly under the auspices of Federal and state agencies, an excellent "short story" explaining the Pennsylvania situation. Mr. Samuel S. Sawyer also supervised the compiling of the text which follows, and which has been put in booklet form for wide distribution throughout the state. This work carries an excellent introduction by Dr. Charles D. Walcott, Secretary of the Smithsonian Institution, while the matter as a whole will give in the natural gas field a better understanding regarding the manufacture and distribution of manufactured gas, and those in the manufactured gas field will gather a clearer knowledge of the situation in the water industry. The introduction by Dr. Walcott and the co-ordinated text are as follows:

INTRODUCTION

The movement now on foot in Pennsylvania to promote the conservation of the mineral resources within the state has a special appeal to our interest in view of our own activities in this field. Our Division of Mineral Technology was actively established in 1913 to promote an enlightened public opinion regarding the mineral resources of the country. Exhibits covering some phase of our two mineral resource types are now available to the public. These include coal cooking operations from the open coke pile through the by-product coking oven and distillating gas plant to the up-to-date coking operation. Our natural gas model is typical. This shows how natural gas is found, reduced to pressure, and transmitted to the ultimate consumer, and visualizes the wastes in production and utilization that must be corrected in order to insure continuity of service to the future from the existing supplies still available.

There is just one way to force this question home and that is to carry it into the home through the schools. The Smithsonian Institution, being national in scope, has secured the contacts to distribute this information to the states and local institutions to carry the argument home.

Pennsylvania natural gas is worth twice as much as manufactured gas that can be made. Since this is becoming true, the demand is now greater than the available supply, and it is of course in the public interest to preserve

the half million natural gas using homes in the state, to prolong the service as long as possible. How to meet the declining natural gas situation and continue this service for the future is herein discussed.

GAS SITUATION IN PENNSYLVANIA

History. Manufactured gas was first exhibited by Michael Ambrose & Company, Italian fire workers and artists in Philadelphia in August, 1796, and first used there, as a public illuminant, in April, 1812. The Philadelphia Gas Company began operations, as a public utility, on February 8, 1836.

Natural gas began as a by-product of the oil industry. Col. Drake drilled in the first oil well in the world, August 28, 1859, on the flats of Oil Creek, south of Titusville in Venango County. In carrying on drilling operations for oil, many of the wells also produced gas and it was soon applied to useful work. The natural gas industry then began to develop in the early seventies.

Geographical Distribution. Natural gas has been developed in twenty-three of the western counties of the state. A large quantity of gas is imported from West Virginia and a small quantity is exported to New York and West Virginia towns.

The manufactured gas using towns are in the eastern part of the state and the natural gas using towns in the western part as shown on the accompanying map.

Extent of Gas Use. There are over 500 natural gas using towns and over 200 manufactured gas using towns in the state distributed as shown on accompanying map.

The state has about 400,000 natural gas consumers and 700,000 manufactured gas consumers, and the relation of the volume of gas used and population served is about as follows: 25% natural gas, 45% of the manufactured gas, while about 41% of the state's population is served by gas. The annual volume is about 100,000,000 cu. ft. of natural gas and 1,200,000,000 cu. ft. of manufactured gas. Natural gas is not exported and about 10% of the manufactured gas using towns do not export gas. The remaining 90% of the manufactured gas is exported to the eastern part of the state. The volume of natural gas does not represent the total gas used in the domestic and industrial consumption of the state, but only the gas used in the cities. The average annual gas consumption per person is about 19 cu. ft. for natural gas and 40 cu. ft. for manufactured gas.

The gas situation in the state is becoming more and more critical. The demand for gas is increasing rapidly and the supply is becoming more and more limited. It is therefore of the greatest importance that the public should be informed of the situation and the steps that should be taken to meet it.

Genius can never despise labor. Stevens

1921. Since gas is sold in "1,000" cubic feet units, this means 6,500 "M" cubic feet. Simultaneously, with this decline, the number of domestic consumers increased from 270,000 in 1906 to 481,000 in 1921 and the number of natural gas wells increased from 7,800 to 16,200. In 1921 it took three wells to supply the same gas received from one in 1906.

Many Natural Gas Towns Too Small for Manufactured Gas. The extensive system of natural gas pipe lines, adjacent to many small towns, has given such towns the advantage of natural gas when they could never have had manufactured gas because of their small size. It is not ordinarily appreciated that it is not feasible to operate manufactured gas plants in small towns, and there are not over about 50 natural gas towns in the state that are large enough for manufactured gas plants. Neither will large manufacturing gas plants be built at coal mines to transmit manufactured gas to small towns now supplied by natural gas; not that there are any insurmountable difficulties in this plan, but it is wrong from an economic viewpoint and cannot, ultimately, be made to pay.

When natural gas is no longer available, then most of the small towns and all of the rural consumers along gas lines, must go without gas service.

Gas Industry Is Rapidly Changing. Gas for lighting should be used only in incandescent mantle burners where the illumination comes from the heated mantle and not from any illumination properties of the gas. This is much more efficient than the old open flame burner. A candle power standard is, therefore, obsolete, of no value to the public and should be abandoned.

Due to crude fuel and operating conditions, manufactured gas must rapidly go to a lower B. t. u.² standard and due to increasing scarcity, natural gas is rapidly going to a much smaller available volume basis. In many cases, in the interest of good gas service to the public, the now low manufactured gas pressures will be raised and the now generally too high natural gas pressures must be lowered. Manufactured gas is distributed at 3 to 4 inches water pressure and natural gas frequently 4 oz. per sq. in. and above; 1 oz. equalling 1.73 inch water pressure.

How Manufactured Gas Is Made. Acetylene—This is made by bringing calcium carbide in contact with water. One pound of the commercial carbide will produce 4 cubic feet of gas, but as this gas is of a very different type than that called "manufactured" or "city gas," it is measured by 100 cubic feet, rather than 1,000 cubic feet; it requiring many less feet to produce the equal of 1,000 feet of city, or manufactured gas. Because of its high cost and other operating limitations, it cannot be considered except for small isolated plants.

Coal Gas—This is made by subjecting bituminous coal to destructive distillation; that is, heating without access of air in externally heated, air-tight retorts. The result-

ing gas is withdrawn from the retorts. When the distillation is completed, a residue of coke³—called "gas house coke"—is left in each retort.

Coke Oven Gas—This is made in a by-product coke oven; that is, the gas evolved by the distillation of the coal in the air-tight ovens is withdrawn and saved. The composition of the gas is similar to coal gas, however, in coal gas the coke is the by-product and the gas is the main product and here the coke is the main product and the gas is the by-product. Many other commercial substances may be made as by-products from the gas.⁴

Water Gas—This is produced by bringing water, in the form of steam, into intimate contact with incandescent carbon, the steam breaking up into hydrogen and carbon monoxide.

How Natural Gas Is Found and Delivered to the Consumer. The first step in obtaining natural gas is securing a lease or right to drill a well. This lease must usually be paid for for several years prior to beginning actual drilling, on the optimistic but unproven faith that there may be gas under it. On an average, for the entire United States, every fourth hole is dry or gasless. When the well is drilled, in order to protect it and prevent the earth from caving in, an iron pipe (called a casing) is driven down through the hole, usually one-half mile deep, and into rock which is always found above gas-bearing sand. If gas is found, a plugging device, known as a "packer," is fastened in the casing or hole in the rock just above the gas sand; and the gas, because of its natural expansive tendency then comes to the earth's surface, through an inner pipe called "tubing," which is screwed into the packer. This "tubing" is then connected by underground pipe to the consumer's fixtures, generally many miles away.⁵

The gas is never at rest, but is a constantly seething, moving mass, traveling in the mains at enormous velocities—at a speed many times exceeding that of the fastest trains—and requires constant attention at the well and until it is burned at the consumer's fixtures.

When the gas is removed from the gas sand, the natural pressure—called rock pressure—must decline. As the gas travels through the pipes the friction causes the pressure to drop. These two features require the installation of expensive compressors for raising the gas pressure so as to compel it to travel to the ultimate consumer. The compressor is a mechanical device to squeeze or compress the gas into a smaller volume, and provide enough pressure to make the gas flow through the pipe.

In no case is the gas found in rooms, caverns, or large crevices, as popularly supposed. The gas sands are simply very porous rocks which contain millions upon millions of microscopic cavities, so that the gas occupies

³Coke is merely the solid residue left when bituminous coal is heated without access of air.

⁴For further discussion see "Creative Chemistry," by Edwin E. Slosson; also Smithsonian Institution (Washington, D. C.) Bulletin 102, Part 1, on "Coal Products and Object Lesson in Resource Administration."

⁵For further discussion see Smithsonian Institution (Washington, D. C.) Bulletin 102, Part 7, on "Natural Gas: Its Production, Service and Conservation." The Smithsonian Institution has a large model showing these various steps. Pictures of this with detailed description can be secured for the asking.

It is only people who possess firmness who can possess true gentleness. La Rochefoucauld.

²The British Thermal Unit—B. t. u.—is the heat required to raise a pound of water 1° F. and is universally used in America in engineering work as the yard stick for comparing heat values. The Calorie (sometimes called large Calorie) is universally used in food problems—one Calorie equaling 3.96 B. t. u. This Calorie is the heat required to raise a kilogram of water 1° C. and is 1,000 times larger than the gram calorie or small calorie universally used in scientific work.

The shadow of trouble is usually darker than the trouble itself.

NOTE: BECAUSE OF LACK OF SPACE IN SOME TOWNS, A NUMBER OF THE TOWNS AND COUNTIES COULD NOT BE SHOWN ON THIS MAP.

RELATIVE
1000' CU. FT. OF GAS PER DOMESTIC CONSUMER
NATURAL GAS



NATURAL GAS AND MANUFACTURED GAS USING TOWNS IN PENNSYLVANIA

RELATIVE VALUES
NATURAL GAS AND MANUFACTURED GAS
HEAT UNITS PER CUBIC FOOT
NATURAL GAS

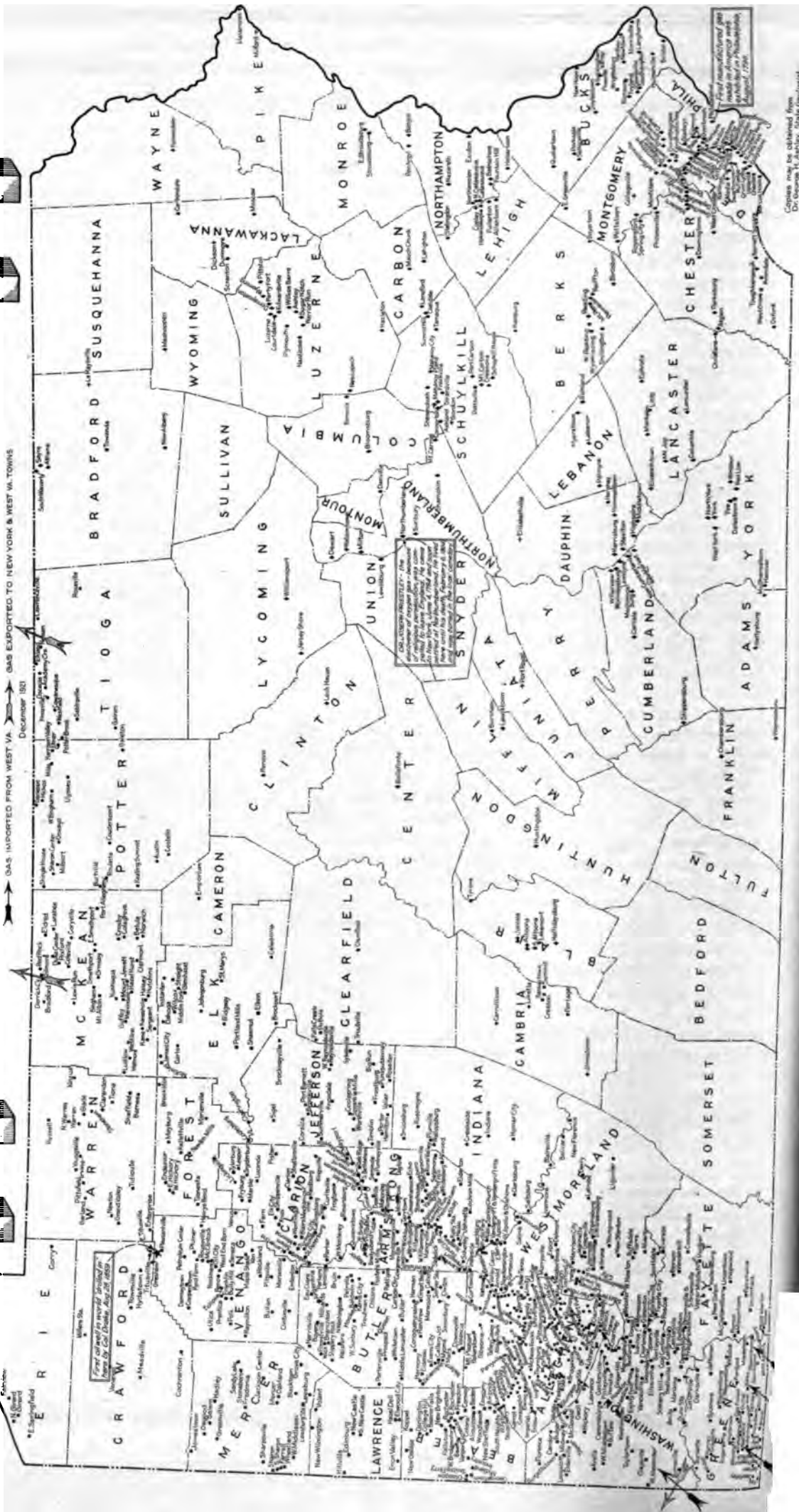


SCALE - MILES
0 5 10 15 20 25 30 35 40 45 50

LEGEND

- NATURAL GAS USING TOWN
- ♦ MANUFACTURED GAS USING TOWN - COAL GAS, WATER GAS OR COKE OVEN GAS
- + MANUFACTURED GAS USING TOWN - ACETYLENE GAS
- GAS IMPORTED FROM WEST VA. → GAS EXPORTED TO NEW YORK & WEST VIRGINIA

December 1931



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Dr. George H. Smith, State Geologist

He who has imagination without learning, has wings and no feet. Attwell

U. S. Bureau of Mines Directions for Coke Use. Instructions on how to handle coke in the home have been carefully worked out by the U. S. Bureau of Mines.¹⁷

"The only way to eliminate smoke in large cities is by using smokeless fuels—a fuel that will burn without producing smoke in any equipment now in use. Coke should be used for heating houses because it is a clean and convenient fuel; it eliminates smoke, reduces the necessity of cleaning the furnace and flues, requires less attention than coal and gives more uniform temperature in the house. By burning coke for domestic heat, more soft coal will be used in by-product plants which will save many by-products that are wasted when coal is used directly in the raw state."¹⁸

The proper use of gas and coke in the home will bring about the necessary public sentiment that must be crystallized in order to effectively control the industrial smoke problem.

¹⁷Technical Paper 242, "Why and How Coke Should Be Used for Domestic Heating"—U. S. Bureau of Mines, Washington, D. C.—17 pages of data giving operating details on how to use coke successfully for domestic heating.

KANSAS CITY CONVENTION

OF course, everybody knows that the Natural Gas Association is going to Kansas City for the week of May 15th, and probably supposes that what remains to be done is simply to plan the details, sound the trumpets, and get the crowd.

The foregoing three features might at first glance seem easy enough, but when it comes to converting an almost round, or partially oval area into an exhibition space, subdivided in a way to provide satisfactory spaces to those who will exhibit, and to make quarters which are not a big flat open area like the remarkably excellent auditorium at Buffalo, into a great exhibits show-room, is no child's job.

The preparing for an exhibition means not simply selecting the hall, but simply carelessly and superficially laying out the diagram,—it's a real engineering job.

Now when it comes to arranging the details of the convention sessions, again we have a man's job. The President, in this instance, must visualize to a tremendous extent, he must mentally discern what is most necessary, and pertinent, for there are many subjects from which to select, yet little time in which to present papers and subjects. Those attending the convention must have sufficient time to properly examine the exhibits, as well as attend the sessions, making necessary few and short sessions.

The President not only must sift the many topics available, in his finding of the very most important ones, but he must also find the right men to present these subjects, men who are qualified from the standpoint of knowledge and experience and likewise, men with ability in the line of verbally presenting topics in a manner to

hold attention of an audience; not in a way to make the presentation prosy, or unattractive.

The President must select men who are not overgiven to the presenting of statistics and figures, but rather one who can transform figures and statistics into an acceptable word-message.

Next, the President must find others who are especially conversant with each respective topic to be presented, and communicate with such with a view to their taking part as leaders in the several discussions. In fact, while to those sitting in the seats at a convention, it may seem that the President has simply to wield the gavel and look pleasant and try to please everybody; the real facts are that the President has on his hands from a period way back of the convention sessions through to the time when he takes his hat and coat from the peg and retires as President, a great big job, unless the President is willing to simply allow the meeting to run itself, and this President J. B. Denning of the Natural Gas Association would never stand for.

In a personal interview with Mr. Denning in Pittsburgh, a few days since, the President said that his general plan will be merely a handful of salient topics, each to be presented by a man of wide, yet of detail experience in each particular line, the four lines Mr. Denning mentioned as already decided upon being, "Production," "Transportation," "Distribution," and "Public Relations," these to be "set" papers, and one will easily note the logical sequence, when reading the list from first to fourth number.

Mr. Denning takes the ground that there should be selected leaders to handle the discussions following the respective "set" papers, a separate leader for each of the discussions; each leader experienced and well versed in the line. The President purposes relinquishing the chair at the beginning of each of these set discussions. His thought is to invite each man chosen to lead the discussion, to occupy the chair of the President for an hour, that being the time set aside for the discussing of each of the respective papers. Thus if four "set" papers are decided upon, the President would relinquish his chair four times to four distinct and separate discussion-leaders. This is a new and clever idea.

Mr. Denning said, "This is a western gas man's meeting. The West wanted the meeting, the West will have the meeting, and the West should take a very interested part. At the same time, however, the eastern gas-man and the eastern equipment man should earnestly do all within his power to make this a notable meeting, and to cause the western man to have the feeling, which does exist, that there is no east or west other than that laid out in the geography; merely a physical, not a mental or industrial east or west, for we are but one."

The Chamber of Commerce of Kansas City, the hotels of Kansas City, and the interests of the West are fully alive to the desirability of making the Kansas City meeting a "hummer." President Denning in our chat the other day used this same expression, "Let's make it a 'hummer'!"

Power admits no equal, and dismisses friendship for flattery.—Moore.

[illegible]

The wings of thought

the 1990s, the United States has been the only country in the world to have a president who was elected to office by a majority of the popular vote. The "electoral college" system, which has been in place since the founding of the country, was designed to ensure that the president would be elected by a majority of the states, rather than by a majority of the popular vote. The system was intended to protect the interests of the small states, which were feared to be overwhelmed by the large states in a popular vote. However, the system has been criticized for being undemocratic and for allowing a small number of voters in a few states to determine the outcome of the election. In the 2000 election, the controversy over the electoral college system was a major issue, as the results were disputed in several states. The controversy was ultimately resolved by the Supreme Court, which ruled in favor of the electoral college system. The controversy highlighted the need for reform of the electoral college system, and has led to a number of proposals for change. One proposal is to abolish the electoral college and to have the president elected by a majority of the popular vote. Another proposal is to have the president elected by a majority of the states, with each state having an equal number of electoral votes. A third proposal is to have the president elected by a majority of the popular vote, with each state having an equal number of electoral votes. The controversy over the electoral college system is a complex issue, and there is no simple solution. However, it is clear that the system needs to be reformed to ensure that the president is elected by a majority of the people.

PATENT GRANTED

[illegible][illegible]

GOING VALUE PREDICATED ON EFFICIENCY



The wings of thought bear us on to action

TEMPERATURE COOKING

IN our next preceding number we published an article, entitled, "Dependable Heat Control." A number of letters have been received by us commenting favorably upon this article, and now we are hitting-it-up again under a different title, though the subject is quite the same.

With the means what they are for absolutely controlling electric heat, this competition in the field of heat-treating appliances, under which gas ranges would naturally come, must be met. It is of vital importance that the gas industry should at all times have the equivalent available to the users of, for instance, gas ranges.

For years the National Stove Company of Lorain, Ohio, has equipped its range-ovens with a thermostatic heat-control, in order that users might practice the art of automatic temperature-cooking rather than to bake by guess-work or intuition, whichever one would wish to term the art as known to the old-time cook who "judged" her oven.

We have, however, found the American Stove Company interests welcoming rather than resenting the increase in number of heat-controlled gas ranges being offered by other manufacturers, even though it now leaves them far from alone in the field of supplying ranges thus equipped.

The very fact that thermostatic heat-control has so grown in popularity, places upon it the stamp of approval. Thus manufacturers and buyers alike grant that the system when first introduced was a stride in the right direction.

As yet there are many of "the old school" who will be converted; that is always the case when a new device, or a device that is comparatively new is brought more generally to the attention of the people. These will, however, rapidly come into the fold.

In these days when so very large a percentage of housewives, both young and old, are doing their own cooking, and the "old mammy's art" of "judgin'" of oven-heat, has passed, or is passing away, this new method, heat-control, should find a ready welcome. It is not a fad; it is a thing that is practical; it has come to stay and is rapidly being adopted by many in the trade. The need in the gas-field is that not one step should be permitted on the part of electric interests that has not its equivalent or its superior to be found in the gas field.

Already we not only find the electric range in the home, in apartment house kitchens, etc., but there has come to us within the last few days an announcement that the Dunwoody Institute at Minneapolis, Minn., has installed a 25 k. w. electric range to take care of the cooking requirements in the school cafeteria. This will mean directing the attention of pupils to electricity for cooking. Gas companies should be on the alert to prevent public institutions so far as possible from being induced to equip their plants with electric cooking equipment.

The spirit among manufacturers seems to be broad-tread and of the right sort, for here is a paragraph we have extracted from a letter received a few days since from the Robertshaw Manufacturing Company, makers of oven-heat control thermostats:

"As manufacturers of thermostats for many years and as practically the oldest manufacturer of mechanical thermostats for controlling temperatures in ovens, we have read with interest your remarks on Oven Heat Controllers, on page 30 of your January issue. No one knows better than ourselves the amount of work and the quality of the work that has been done by the manufacturers and producers of the Lorain Oven Regulator. Being practically the only manufacturers in this line for years, we know what it is to play a lone hand, and we feel certain that, whatever part we play will be of assistance, not only to the gas industry and particularly range manufacturers, but our work along this line will be of help even to the American Stove Co. You can count on our 'boosting the principle,' as you state, because for several years to come, it will be necessary to boost the idea and not any one particular type of oven heat control. We do not think there is a manufacturer of stoves or a manufacturer of thermostats or oven heat controls who is not greatly indebted to the American Stove Company. As we have stated, we have been fighting a lone hand for years, and we know that their advertising and their constant work with the Lorain Oven Regulator has been of assistance to us, not only in the matter of oven regulators, but in bringing the thermostat for any domestic purpose more prominently before the general public."

From the other side of the fence comes the following; it's from an American Stove Company man:

"The article, 'Dependable Heat Control,' is good. It touches the right chord.

"You will be doing the gas field a benefit if you keep at it along this line. We cannot expect you to mention 'Lorain' in your editorials, neither do we ask it.

"Our only wish is that you further the movement for precision of cooking as against the old method of guess-work. Styles change; new modes come into vogue, and if we read the times correctly, 'Time and Temperature Cookery,' the new style of cookery, is fast displacing the old.

"Very well, if you in your editorial can exhort your readers to adopt precision appliances as a *principle*, we are content, and will rely on our ability as *merchandisers and advertisers*, to get the message over, that, 'when buying a heat-measure, always select "Lorain."'

"Your's really is the first frank decision of this new trend in gas appliances. We hope you can follow it up for the good of the gas business, because the 'service' that a heat measure affords, gives to gas a new lease of life. With heat appliances on the ranges, no gas company need fear electric competition."

The magazine editor may tell of the principle involved, but it's up to the manufacturer to put his sales on.

Power cannot have too gentle an expression.—Richter.

AROUND THE BELT

New Wells, New Pipe Lines, New Concessions, Additions and Extensions. A Field of Valuable News Gathered for the Journal Through Many Sources.

TRADE PERSONALS

ales, J. H. has been appointed Conservation of the gas field recently developed south of the Oklahoma Okla. and west of the city of Bliss, Fr. Chinkscale will make his headquarters at Tulsa Okla.

en, N. E. Manager of the El Reno Division of Thomas Gas & Electric Co. has been elected of the Chamber of Commerce at El Reno. In Mr. Garrison's fourth term as President of the Chamber of Commerce.

l. A. has been appointed Assistant Manager Equitable Sales Company, Pittsburgh, Pa.

l. Edward, formerly a member of the natural units, and now President of the Haynes Auto Company and other interests, has been elected member of the American Society for Steel

n, J. E. is President and General Manager of Soto Oil & Gas Company recently organized in Jacksonville, Fla.

C. C. has been appointed Manager of H. M. A. Company's eastern offices. Mr. Levin will have headquarters in New York City.

l. A. at the annual meeting of stockholders of the Natural Gas Company, Pendleton, Ind., elected Vice President of the organization.

H. B. has been elected Vice-President, Manager and Chief Engineer of the Canadian Natural Gas Light, Heat & Power Company, Alberta.

l. Theodore, P. who was connected with the Gas & Electric Company, Louisville, Ky. lately as Publicity Department of H. M. Rylands & Co., Chicago, Ill.

l. E. has been re-elected President of the Natural Gas Company, Pendleton, Ind.

George N. Manager of the Richmond Division, Western States Gas & Electric Company, Tulsa, Okla. was recently appointed on the City Commission of that city.

l. P. V. has been elected Vice-President of Soto Oil & Gas Company, Jacksonville, Fla. organized.

l. Oscar has been appointed to take charge of the National Supply Company's oil and gas territory and is located at Casper, Wyo.

l. J. C. has been elected Vice President of

the National Supply Company, and will in future be located at Independence, Kan., the headquarters of the company. Mr. Wetherill was formerly in charge of the company's affairs in the northwest, being located at Casper, Wyo.

Yost, F. E. has recently become representative for the Kompak Company of New Brunswick, N. J. in Pittsburgh. Mr. Yost was previously connected with the Equitable Gas Company of the same city in the capacity of Industrial Representative.

ELECTED

INDIANA *Pendleton* The stockholders of the Pendleton Natural Gas Company at their annual meeting re-elected the former officers. They are: President, J. J. Rogers, Vice President, L. A. Mays, Secretary, R. F. Thomas.

PENNSYLVANIA *Sikestonville* At the annual meeting of the Sikestonville Dillion Oil & Gas Company, seven members of the Board of Directors were re-elected. The new member elected is Frank D. Leopold of Clearfield, Pa.

INCORPORATED

DELAWARE *Haldimington* The Victor Oil & Gas Company has been incorporated with a capital stock of \$400,000. The Corporation Trust Company of America is agent for the new concern.

FLORIDA *Jacksonville* The De Soto Oil & Gas Company has been organized with a capital stock of \$100,000. The officers of the new concern are: President and General Manager, J. E. Johnson, Vice President, P. A. Summers, Secretary, Treasurer, H. E. West.

ILLINOIS *Marion* The Sterling Oil & Gas Company has been incorporated here with a capital of \$100,000. The incorporators named are: H. E. McEggers and M. E. Forshes.

OKLAHOMA *Tulsa* The Republic Oil & Gas Company has been incorporated with a capital stock of \$25,000. The officers of the new concern are: W. H. Lippert and George A. Hendrick, both of Tulsa, Okla., and L. M. Siskels, of Tulsa, Okla.

WEST VIRGINIA *South Charleston* The South Charleston Corporation has been formed with a capital stock of \$100,000. The incorporators named are: H. C. Zegg, J. E. Riley, S. H. Mullins, A. W. Scott and A. H. Huntington, all of South Charleston.

Reason teaches us to be silent; the heart teaches us to speak.—Richter.

PER CUBIC FOOT—RATES

ARKANSAS—Fort Smith—An increase in its rate from 8 cents to 10 cents per thousand has been granted the La Salle Oil & Gas Company, which delivers its product to the city line. The company's request was for an increase of 15 cents per thousand.

PENNSYLVANIA—Pittsburgh—The rates recently adopted by the Equitable Gas Company, the Allegheny Heating Company and the Monongahela Natural Gas Company are 53 cents per thousand, less 3 cents per thousand for prompt payment, and lower rates for larger consumption than 200,000 cubic feet per month. The former rate was 47 cents per thousand. The prepayment meter rate has been increased from 25 cents per 500 feet, to 25 cents per 425 feet.

Pittsburgh—Permission has been secured by the Hope Natural Gas Company to increase its industrial gas rate from 28 cents per thousand to 30 cents per thousand.

Sheffield—The Crescent Gas & Oil Company has been granted permission to increase its rate from 45 cents to 50 cents net per thousand. This company supplies Monaca, Colona, Wireton, Monaca Heights, Glenwillard and South Heights as well as this city.

NEW FRANCHISES

KANSAS—Arkansas City—The Kansas Gas & Electric Company has been granted a thirty-five year natural gas franchise in this city, as well as in Cherryvale.

OKLAHOMA—Sulphur—The Cozart Service Company, it is reported, is seeking a natural gas franchise in this city.

TEXAS—Ballinger—The Russell Production Company has been granted a franchise under which it will supply this city with natural gas from the Russell field, located fifteen miles from the city.

The company in its No. 1 well in this field developed a good supply of gas and oil, and is now drilling a second well.

GENERAL

CALIFORNIA—Long Beach—The Shell Company has a good gasser in its No. 1 on the Wilbur property. The Southern Counties Gas Company has contracted for the major portion of the output of the well.

COLORADO—Denver—A proposition is being considered here which contemplates the bringing of natural

gas to the city from the Lost Soldier and other Wyoming fields. It is estimated that the cost of building a line from these fields to the city would approximate \$10,000,000.

GEORGIA—Fort Gaines—It is reported that the matter of drilling for gas on the banks of the Chattahoochee River is under consideration here by local capitalists.

KANSAS—Eric—The properties of the Southwest Gas & Fuel Company have been purchased by E. A. Eakin. Mr. Eakin is largely interested in Allen County as a producer.

Hutchinson—According to report, the Kansas Gas & Electric Company has taken over the properties of the Newton Gas & Fuel Company and of the Hutchinson Gas & Fuel Company.

Longton—A large gasser has been completed by the Southwestern Gas Company on the Davis lease, section 7-30-11, near this place.

Neodesha—The gas being produced in the Neosho Falls field, newly opened, has been contracted for by the Hale Gas Company, which serves this city with gas. The company has under construction the line which will convey the gas to the city.

KENTUCKY—A Senate bill introduced recently gives a person or persons furnishing work or labor to leases holding or owning leaseholds or any right on oil, gas or other minerals, a lien on leaseholds to secure payment.

LOUISIANA—Caddo Parish—The Arkansas Natural Gas Company is drilling a deep test on the Ardis and Lay lease, section 2-21-15, Pine Island district. The drill has reached a depth of 3,165 feet.

Coushatta—Natural gas service has been established here by the United States Drilling Company.

Perryville—It is reported that the Stovall Trustee No. 2 well, recently completed, has a capacity of around 40,000,000 cubic feet. The location is near the Ouachita-Morehouse parish line.

Shreveport—No. 1 of the Terry Summerfield Oil Company on the Smith lease, something over four miles east of El Dorado, is reported good for 10,000,000 cubic feet at a depth of 2,207 feet. It has been reported that the well has been purchased by the El Dorado Natural Gas Company, which will market the product to concerns drilling wells in the field.

MASSACHUSETTS—A Senate bill is introduced to prevent the pollution of fresh and salt waters by refiners or dealers in petroleum and other products.

A House bill is introduced providing for an excise tax upon gasoline and other products used in the propelling of motor vehicles.

NEW YORK—Albion—Test drilling has been put under way on the Delzon Hobby farm at Gaines. Other interests have also leased property in this vicinity and are making investigations as to the possibility of developing oil and gas.

Never argue with a man who talks loud. You couldn't convince him in a thousand years.—Exchar

at Hunter, Dickinson, Peck & Dougherty struck a very good well in the Abbey District of this place. The gas was developed at a 250 feet.

Lawrence. The Rose Valley Oil & Gas Co. increased its capital stock from \$30,000 to

\$50,000. The Marshall Preston Company has completed gas in the outline land at a depth of

600 ft. The work of piping the natural gas distribution is being rapidly pushed along by the Products Company. The pipe line there is with the company's wells nine miles long completed.

Lawrence. It is reported that the Chickasha Gas Company has constructed a line connecting its line to the Oklahoma Natural Gas Company, thus making its supply of gas from the latter

company. The properties of the Chickasha Gas Company, Warren and Copan have been put up for sale. Warren and George E. Howell, the owner of Warren, the latter of Coffeyville.

Lawrence. The Chickasha Gas Company has completed a line to the Chickasha section 23 in 1902. The gas has been handled off and the company is now making efforts to reach the city.

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Pittsburgh. The Chickasha Gas Company, it is reported, has itself compelled to abandon the manufacture of carbon black in the Chickasha field following an order by the Corporation Commission revoking a previous order granting the company permission to use not over 3,000,000 cubic feet of gas per day in its carbon black plant.

Ripley. Natural gas service was recently established in this city with the completion of the line connecting the city with the supply from the field.

PENNSYLVANIA. Clarion County. E. W. Neely has completed a good gusher on the Jordan Brothers farm in Pine Hollow section. The gas was found in the fourth sand. The output has been contracted for by the Pennsylvania Fuel Supply Company of Emlenton, Pa.

Location has been made by Mr. Neely on the Jordan farm for a second well.

Greenville. With an eye to the future, when the local natural gas supply will have possibly dwindled seriously, the Greenville Gas Company is undertaking a number of important improvements in its distribution system. All of the work is planned with a view to distributing manufactured gas. A new gas holder is also to be erected.

Meriden. According to an order by the Public Service Commission, the United States Natural Gas Company will continue supplying gas to the Meriden Gas Light & Fuel Company, which in turn distributes the product in this city. The order preserves natural gas service to more than 600 residents of the city and surrounding territory.

Washington County. In Canton Township, Hughes and Day have a gusher in the fourth and fifth sands at a second test on the S. C. Liberator farm.

In Canton township, the River View Oil & Gas Company has a light well in the fourth sand and a small gusher in the Beaver Run at No. 3 on the Wesley Lee farm.

Washington County. The Pittsburgh Gas Co. has completed its No. 1 well in the fourth sand in the River View section. The output is estimated at 1,112,000 cubic feet per day. The well has a column of 1,000,000 cubic feet of gas with 1,000,000 cubic feet of rock pressure.

PENNSYLVANIA. The Atlantic Coast Gas Company is completing plans for the construction of a new gas line to the city.

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There are no astonishing ways of doing astonishing things. Haydon.

place. Gasoline will be recovered from gas that is piped to Fort Worth and Dallas for distribution.

Marshall—The gas pipe line connecting this city with the Bethany gas field was recently completed. An enthusiastic celebration was held on the day the line was pronounced ready for operation.

Marshall—The Industrial Gas Company, it is reported, has completed a very large gasser in its No. 2 well on the Tiller property in the Bethany-Elysian field.

San Antonio—In McMillin and Live Oak Counties, this state, M. M. Sweetman of Kansas City is reported to have leased 50,000 acres of land on which something like 100,000,000 cubic feet of gas are already being produced. It is reported that the plan is to market the gas in this city.

Stephens County—The California Petroleum Company has completed a large gasser in its No. 2 on the Brown tract, near Eliasville.

Webb County—No. 2 well of the Schott interests came in with an estimated production of 35,000,000 cubic feet. The well is also making around thirty-five barrels of oil a day.

WEST VIRGINIA—*Monongalia County*—The Clay District Oil Company, drilling into the 50-foot in its test on the Samuel Stull farm sand developed some gas, but discontinued drilling and is utilizing the gas developed.

In Clay district, the Hope Natural Gas Company's test on the I. B. Wright farm is a gasser in the Bayard sand.

Marion County—In Paw Paw district, the Ownes Bottle and Machine Company has a gasser in the Big Injun sand at a test on the W. D. Barbe farm.

Monongalia County—In Clay district, the Hope Natural Gas Company's test on the Ruth Stephents farm is a fair gasser in the Bayard sand.

Morgantown—An explosion at the compressor station of the West Virginia Utilities Company located near Guston Run and Barker recently, caused the death of Glenn Sutton of Morgantown, W. Va., while Charles Kiger was seriously injured. The plant is totally wrecked, the loss being estimated at \$100,000.

Domestic and industrial consumers suffered considerable inconvenience when operation of the plant ceased.

Ritchie County—On Alum Fork of Coal Run, Union District, the Hope Natural Gas Company drilled its test on the J. M. Boyce farm through the Big Injun sand. It is a gasser in this formation. On Hughes river, the same company's test on the Sarah Colgate farm is thru the Gantz sand and dry.

On Hughes river, Union district, J. T. Locke and Company have completed the No. 1 well on the D. R. Estebee farm in the Big Injun sand and have a gasser. In the same district on Alum Fork of Bone Creek the Hope Natural Gas Company has completed the No. 1 well on the Oth Hickman farm in the Big Injun sand and it is a gasser.

In Grant district, Norris & Mercer have a gasser in the Big Injun sand at a test on the Asa Parks farm. In Clay district, J. B. Yates & Co.'s test on the E. E. and L. J. Wells farm is a gasser in the Big Injun sand.

Ritchie County—In Union district, the Hope Natural Gas Company has a gasser in the Salt sand, at a test on the Okey Garner farm.

In the same locality the Philadelphia Oil Company's test on the J. W. Bush farm is a good gasser. The same company has a gasser in the Big Lime at second test on the Smith Good farm.

Roane County—In Reedy district the Heck Oil Company, after drilling its test on the S. D. Sheppard farm to a depth of 2,909 feet and failing to find oil or gas, has abandoned the hole.

Tyler County—On Middle Island Creek, Centerville district, the Bond Oil Company has completed a test on the B. S. Smith farm. It is a light gasser in the Big Injun sand.

Located in Flemington district, the Hope Natural Gas Company has a gasser in the 50 foot sand at a test on the Emma V. Randolph farm.

Wetzel County—The Carnegie Natural Gas Company's test on the J. E. Williams farm is a gasser in the Gordon sand. In Church district, the Miller Gas and Oil Company has a gasser in the thirty-foot sand at a test on the Belle Robinson farm.

The Eastern Petroleum Oil Company is finishing the Number 2 well on the Kuhn farm. They got a light showing of gas, but went deeper only to find a dry hole. The well was plugged back to where the gas was found, and shot. It is a fair gasser.

Wetzel County—In Clay district, the Johns Oil Company has a gasser in the Big Injun sand at a test on the Harvey Antill farm.

In the same locality the Ellis Miller Company got one of the same kind at a test on the C. Robinson farm. The Carnegie Natural Gas Company has a rig completed for a test on the Ann Welch farm.

Wheeling—It is reported that 1,600 acres of land, two miles northeast of Flushing, in Harrison and Belmont counties have been purchased as oil and gas land by Samuel Brokaw, of Flushing, acting for George Anderson and Fred Andree, of Pittsburg, Texas, oil and gas operators.

The land adjoins the old Uniontown field on the east and south, and on the west is adjacent to the Octo Oil company fields.

WYOMING—*Casper*—It is reported that the Ohio Oil Company has under construction a pipe line 72 miles in length, extending from the Elk Basin field to Billings.

ALBERTA—*Pouce Coupe*—Imperial Oil, Ltd., reports a good gas flow in its test on Pouce Coupe Creek, section 73-13-5. This is the first well drilled by the company in this section. A second well is reported under way in another portion of the section.

Great works are performed not by strength, but by perseverance. Johnson.

WYOMING—Casper—It is reported that refineries in and around this city are drawing upon the gas production of the New York Oil Company to the extent of 20,000,000 cubic feet of gas per day. The gas is developed in the Poison Spider field.

ALBERTA—Calgary—The Canadian Western Natural Gas, Light, Heat & Power Company has completed a pipe line connecting their main line with the Turner-Valley field.

ONTARIO—Lambton County—The Union Exploration Company in No. 3 on the Mackie farm, Dawn township, has completed a good gasser at a depth of 1,820 feet.

Leo Wilson and others have completed a good gasser on the Kimber farm, Sarnia township. These interests are also drilling several wells in other locations.

ONTARIO—Dufferin County—The Canadian Oil fields in No. 2 near Shelburne has drilled to a depth of 2,632 feet and reports a good flow of gas as well as some oil.

Kent County—The Petrol Oil & Gas Company has completed Nos. 1 and 2 wells on the Bagnell lease, the combined production of the two wells is about 10 barrels of oil and 500,000 cubic feet of gas.

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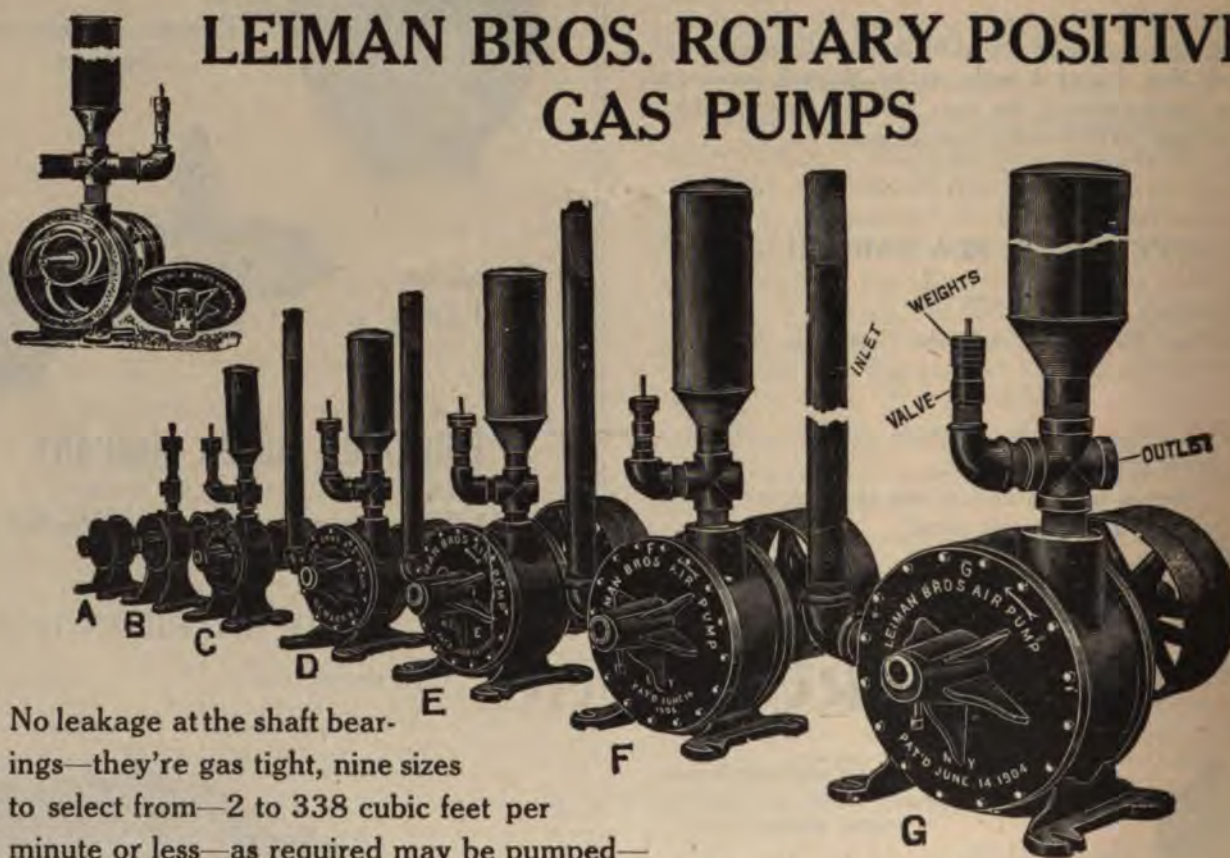
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GASOLINE-PRODUCTION
TRANSPORTATION - DISTRIBUTION

Vol. 3

MARCH 1922

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VH4

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IS
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OIL WELL SUPPLY CO.
PITTSBURGH

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LOS ANGELES

SAN FRANCISCO

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Everything for Oil Wells

Branch Stores in All Oil Fields

What the People's Money Will Do

IN the days of old Mother Hubbard, there were shortages of the necessities just as there are shortages in the present day. In "Mrs. Hubbard's" instance it was a bone that was required. In the case of gas interests in these later days, as has also been the case in all times since wampum and other equivalents were produced to be used in exchange for labor, supplies, etc., it has taken money to make the mare go.

Gas interests of late years have often gone to the cupboard to find the wherewithal to pay their faithful employes and the wherewithal to pay for needful supplies and equipment, and have found it bare.

During the last year, however, many gas companies have received advances in rate per thousand cubic feet. These advances have not been the with-which to line their pockets, but to make possible needed expenditures for development and reasonable dividends to investors.

The outcome of many favorable decisions on the parts of utilities commissions and local town or city councils, is that whereas little was being done in the drilling of new wells and toward expanding the industry, now indications point to a very different condition.

The higher prices that are now being paid by individuals and institutions for gas, has by no means cut down the demand; it has in some instances reduced the unit-volume of consumption per gas-range or other piece of gas-equipment, but with every foot saved at these burners there has arisen demand for gas for more purposes, and more are becoming gas users, graduating from the hard fuel stage into the stage of not simply desiring but requiring gas-service.

Though the public may not realize it, there has arisen a great force in their behalf out of the small unit advances that individuals are paying. In manufactured gas districts, the gas conditions in communities are improved as is also the case in communities served by natural gas.

Both wings of the vast enterprise in the United States have in these few years past been sufferers, and as a consequence the domestic consumers of gas and likewise the industrial consumers have as well been sufferers on the basis that it is impossible to prevent the entire body from suffering to a more or less extent if there be ailment, even though localized in a way within the general body afflicted.

We are now certainly emerging from a long, trying experience. The sins of under-pay have been visited upon the utility companies by the public and through them upon the public again; a regular "round robin," but things are righting themselves and the cloud that has hung low is lifting, even if it is not as yet very rapidly passing away. It must lift first and that's the transition state of today, favorable winds will finally drive the clouds out of sight and ours will again be sunshine.

Lucius S. Bigelow

THE NATURAL GAS INDUSTRY

TRANSPORTATION — GASOLINE PRODUCTION — DISTRIBUTION

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CONTENTS FOR MARCH, 1922

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NATURAL GAS CONVENTION

THE diagram of booth-spaces is now in the hands of the manufacturing interests of the natural Gas fields, indicating the lay-out of the convention hall at Kansas City where the exhibits will be shown and the sessions held during the convention, May 15-18. The prices for booths range from seventy-five dollars to two hundred and fifteen dollars, there being booths also available at eighty, eighty-five, one hundred, one hundred and five, one hundred and fifteen, one hundred and forty, and one hundred and fifty dollars each. If we mistake not, the rates are somewhat higher this year for both spaces. If this be true, then we assume that such may have been made necessary by virtue of the fact that the area does not lend itself in form, as well to the needs of manufacturers requiring large space as in an auditorium with square walls, this resulting in, perhaps, two conditions, fewer spaces with no shrinkage in overhead; thus word has come to us.

The convention at Kansas City is going to bring a lot of new blood to the convention sessions and to the exhibition.

Men will be present from those southwestern districts and the northwest, who, we presume, have never before attended a convention of this Association, unless perchance a few of the "old guard" who were present years ago when the Association held its convention in Joplin, Mo., or conventions in Kansas City, etc.

In those earlier days there was a close-knit feeling, every member knowing that he was a factor because the membership was smaller, and, although there were no exhibits of any consequence shown in those days, the desire to be present at the convention, in order to meet friends and "talk-over-matters," was very great, and helped to compensate for the fine exhibits of equipment and supplies and the "free-lunches" of these later days.

In going back to Kansas City we shall be returning to old haunts and familiar scenes, save for the fact that Kansas City today is a bigger city and a city with more varied business interests than in times gone by.

Kansas City was a busy city when formerly we met there, but its interests were not so varied as at present, therefore we shall this time find outside of the convention hall and outside of exhibition hall many things of interest that our western friends will wish to show us.

We understand that manufacturing interests and gas interests in the southwest and the northwest will line up in fine shape to greet the eastern interests, both manufacturing and gas, with a real western hospitable "howdy!"

On the main floor of Exhibition Hall there are sixty-six exhibition spaces, then in the west arcade there are twenty-nine booth-spaces, and in the east arcade there are twenty-four booth-spaces, a total of one hundred and eleven spaces. The lunches will be served in the east arcade.

The meeting room is at the extreme north end of the building with the main entrance at the south end, thus those entering to attend the meetings will pass through the main Exhibition Hall, but provision should be made whereby those passing in should not overlook the concerns exhibiting in the east and west arcades.

Just as a thought, would it be well in the morning when delegates are assembling at the convention and exhibition building, to, in some manner, turn them to the right and the left in order that they might pass the exhibits in the two arcades. Exhibits in the arcades will be less likely to be visited than the exhibits in the main hall which, because of location, will be sure to have the attention of delegates.

A barrier placed across the passage way from the main entrance into the main exhibition hall with large arrows pointing to the left and the right, this barrier to remain in place until after the morning session has been called to order, each morning, would ensure the giving of attention to the exhibits of those in the east and west arcades and would make those spaces thereby of equal value, let us say, with many of those on the main floor.

The foregoing thought is simply born of a knowledge that at various exhibitions held in conjunction with conventions in various fields certain exhibitors have been greatly disappointed because they have not at their booths received the attention that others have received, due largely to location. In our natural gas shows we know it is the desire of the management to have every man equally well served and every interest brought so to the fore as to prevent disappointment and criticism.

The "Wrinkles" of the Kansas City meeting promise a rare treat and yet all of those who are capable of producing "Wrinkles" helpful to the industry have not, as yet, turned in their quota. We, therefore, urge the men of the field, the men in gas company offices, the men in meter shops, the men who are fitters, etc., to go-to-it and turn in information regarding how they have found it possible to do things in ways easier and quicker than by usual methods.

The Association management purposes to entertain those who attend the convention, in a worthy manner, and all may be assured that the four days in May, starting with the middle of the month, May 15th, will be looked back upon as red letter days when the convention of 1922 shall have gone down into history.

Mr. L. B. Denning, the worthy President of the Association for this year, has it in mind to provide a type of papers and discussions that shall challenge those heretofore presented at conventions of the organization. Mr. Denning has his plans well laid, his program excellently lined up as told-of in last month's issue of THE GAS INDUSTRY, and his choice of speakers is, indeed an excellent one.

The thing for YOU to do is to turn up at Kansas City, register, attend the sessions, visit the exhibits, get acquainted, meet your old friends, and give as well as receive.

Don't think for a moment that any man is interested in your troubles—unless he is a lawyer.

California Field

Beach Resort Now Famous Oil Field

NO doubt, one of the most favorably situated oil fields in the world is southwest of Los Angeles, about 40 miles. It is known as the Huntington Beach oil field in California. The Huntington field has not been burdened with many of the difficulties and problems that have confronted various of the older fields and some not yet opened which are in remote districts, since it is situated on the edge of an industrial center.

Huntington's wonderful bathing beach has made the district known quite widely among summer bathing fans,

advantageous viewing of the surrounding country by those who might choose to climb the ascent.

The Standard Oil Company, with leases totaling 6,000 acres, started activities at Huntington Beach two years ago, and to this Company alone must be given the credit of discovering the field. In August and October of last year, the Company brought in its first two prospect wells, and in November started the excitement by bringing in Bolsa Chica No. 1 at an estimated rate of 6,000 barrels per day. Due to the terrific gas pressure and the sand which came in with the oil, the fittings were rapidly cut away and the well ran wild, sanding itself up about two



GLIMPSE OF HUNTINGTON BEACH OIL FIELD SHOWING
BUSINESS SECTION IN MIDDLE DISTANCE

Just it remained for the discovery of oil to make the section world-wide known.

The section about Huntington Beach, top 'o ground, lends itself excellently well to the cultivation of sugar beets and as a result beet sugar has become quite a mainstay of the district. Formerly there was but a small business section in the neighborhood of this district. Today, however, things are very different as will be noted in our illustrations of the field. Greater prosperity, and a bustling atmosphere make the district indeed a live center.

It will be noted that the type of derricks used are more picturesque than those found in the eastern oil and gas fields. In a sense they have quite the appearance of being Eiffel Towers, erected for the purpose of

days later. The well was again brought into production on March 11th, and is now flowing about 2,000 barrels per day. The Company has continued development and at present has a daily production of 6,700 barrels from seventeen wells, with twenty-two wells in process of drilling.

Development has been so rapid that in order to facilitate operations a new division has been formed, including the properties south of the Long Beach field and north of the Huntington Beach field.

A study of the growth and activities of the Huntington Beach Field is a most interesting one. When Bolsa Chica No. 1 was brought in and broke loose, the oil world awoke to the possibilities of the field; every available lot was soon under lease, and even the beach was taken up under the Placer Mining Act for miles up and down the

A long face often indicates a thick head.—"Good Fixtures."

coast. A wild orgy of derrick-building started, and so persistent has been the activity that at present there are eighty-five organized companies, with a total of 226 rigs and a daily production of 16,000 barrels.

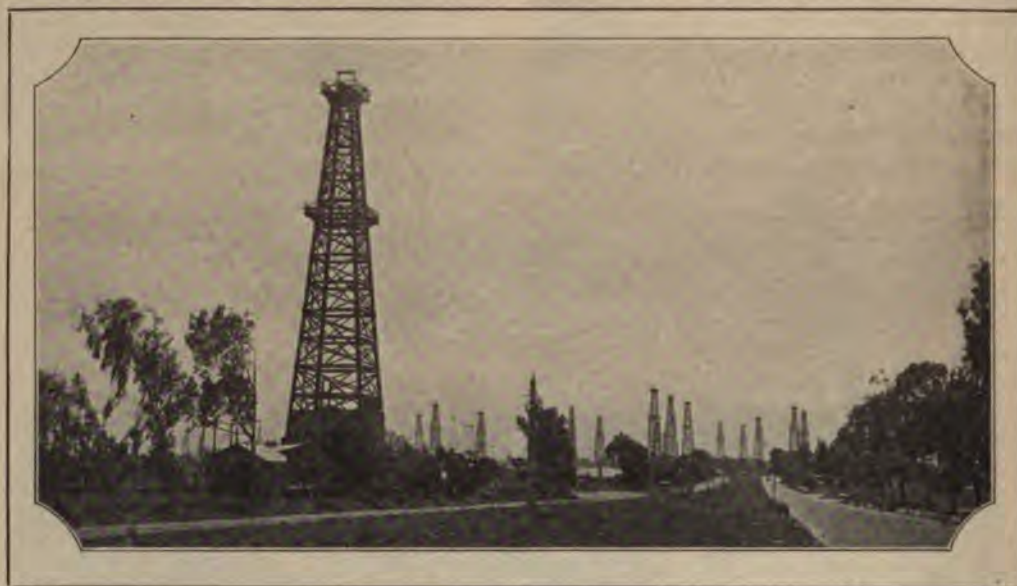
At first activity was concentrated along a narrow strip between the Standard Oil Company's Bolsa Chica No. 1 and their Surf well, this so-called "productive area" extending to the northeast and eastern section of the town. Today the wells are producing from an area which would be about one mile wide by three miles in length.

The wells vary in depth from 2,250 to 4,200 feet, depending upon their location on the structure and the zone from which they are producing. The oil varies in gravity from sixteen to twenty-seven degrees Baume.

The Standard Oil Company is completing its tank farm and steam pumping plant two miles north of the

SEVERAL FIELD REPORTS

A RECORD breaker has been announced from Haynesville, La., field, a gain in one week of over three thousand barrels forwarded by pipeline, as compared with a week previous. In the north Louisiana and southern Arkansas district an increase was shown of nearly three thousand barrels, thus indicating marked activity in that territory, while the Houston field, Caddo district, section 27-22-14, has produced a well delivering in the neighborhood of 500,000 cubic feet of gas, this delivery coming from a depth of about 2261 feet. Gas from this depth in the Houston district is looked upon as possibly indicating a third oil producing sand, and it is said that the formation would seem to give further evidence in this direction.



TYPE OF DERRICK USED GIVES VIEW OF FIELD PICTURESQUE APPEARANCE

city, and has completed a four-unit gas-compressor plant and is starting construction on four more units. The Company has also completed its camps, which, with comfortable living quarters and a boarding-house for the employees, include a first-class machine-shop, blacksmith-shop, boiler-shop, warehouse, garages and other necessities to facilitate the operation of the field.

There are many interesting features in the field aside from those pertaining to its operation. Each day brings a large number of visitors; some are merely interested observers, while others are bent on speculation. Busses crowded with sightseers drive through the field, and a man with a megaphone tells them all about the "gusher" field. Then there are the little ten-by-ten shacks scattered along Main Street, serving as headquarters for the companies, many of them painted bright colors to attract the eye of the visitors.

Early boomers are being gradually replaced by substantial interests; the field continues to expand and is rapidly becoming one of the largest and most important in the State. —Courtesy of the Standard Oil "Bulletin" Editor.

FORT WORTH, TEXAS

WORD comes to us from our Texas source, that the Mexia field is likely to augment the supply of gas at Fort Worth from that splendid well drilled on the Seay-Cranfield lease over in the Mexia field.

The Lone Star Gas Company supplies gas to Fort Worth, Wichita Falls and Dallas, along with various other towns enroute.

It is claimed that the well referred to is producing better than 50,000,000 feet of gas, and that this will be put into the North Texas pipe line.

It looks as though all the cares and worries of our friend, O. K. Shannon of Fort Worth, and of other managers along the lines of the Lone Star Company so far as gas shortage is concerned, have been put over to a distant day.

It is said that the producing company is planning to inaugurate a pipe line to supply Mexia, Curry, Richland and Wortham from a well near Richland.

We seldom repent talking too little, but very often talking too much.—La Bruyere.

Automobile Safety Lessons

Lesson Outline No. 12-B

FATALITIES, AUTOMOBILES AND AUTOMOBILE ACCIDENTS

In the United States, in 1919, there were approximately 40,000 persons accidentally killed. Of this number, 22,000 were killed in industry. The remainder were killed on the streets and in the homes. 10,000 persons were killed as the result of automobile accidents. This is the largest number that can be led to any one cause.

It can truly be said that the automobile is the most peace-time machine.

While in the industries, on the railroads and electric lines, and in the mines, through organized safety hazards are coming under control and accidental are being reduced, the fatalities from automobile accidents are mounting by leaps and bounds.

Deaths caused by automobiles, per 1,000 population, increased 20 fold (2,000 per cent) from 1910 to 1919.

Initially not more than one-fourth of the people in the United States are exposed to industrial hazards. As soon as every one the moment he leaves his door his garage is exposed to the automobile hazard streets.

Deaths from automobiles are increasing each year because of the increase in the number of automobiles.

In 1910 there were 400,000 automobiles operated in the United States and approximately 2,000 people were killed as the result of automobile accidents.

In 1919 there were 7,500,000 automobiles and over 10,000 deaths. This is approximately one half the number of people who were killed in all of our industries and railroads in the same period of time.

Whether or not this death rate will continue to increase depends largely upon the efforts put forth by individuals to prevent automobile accidents.

REQUIREMENT OF A SAFE AND COMPETENT DRIVER

One day is coming when the law will require all persons to pass examinations proving that they are physically and mentally fit and have sufficient knowledge to drive an automobile safely. Part of this examination should cover such subjects as the ones presented in these lessons.

Persons who should not be allowed to drive cars:

Children below a certain age

- b. Persons whose height does not permit easy reach of the controlling pedals
- c. Persons who have not sufficient strength to operate control levers easily and positively
- d. Persons under the influence of liquor
- e. Epileptics or others subject to fits or fainting spells
- f. Persons who do not know and understand the traffic laws, ordinary rules of the road, and other points concerned with safe and efficient automobile operation
- g. Persons with dangerously defective hearing or eyesight
- h. Cripples or persons minus arms or legs whose defects interfere with their safe control of an automobile

12. Laws have not yet been passed covering all of these points, but we should bear these things in mind because they are essential for our own safety and the safety of others.

13. The demands for safety are more stringent than the demands of the law, and rightly so. Laws are primarily to insure justice. A full appreciation of safety saves lives and limbs to matter who is to blame.

A complete set of twelve copies of the "Safety Bulletins and Safety Lessons for Automobile Drivers" can be had at cost by addressing the National Safety Council, 437 North Dearborn, Chicago, Ill.

MAY BE CHARGED TO CONSUMERS

Editorial World, Life & Liberty



III. Former New York Public Service Commission for the Second District has issued with the contentment of the City of New York a rate fixing case where the City of New York & Light Corporation was the other party.

The other party, that is, the equipment and maintenance of the City of New York, is being provided by employing the City of New York, a large number of employees, should not be charged to the City of New York, even indirectly. The contrary seems to be a proper disposition of the matter, and it is not a proper purpose to a proper term of fixed capital.

Think of all the things you have NOW that money can't buy — "Good Fixtures"

NATURAL GAS STATISTICS

IT naturally requires a long period during which to gather statistics from the many sources that pertain in the natural gas field. Therefore, the Geological Survey, Department of the Interior, in supplying us with the following data have given us the latest information in their possession. This brings the facts up to 1919 as the figures represent items in 1917 and 1918.

Certain of the states have made vast changes in their natural gas records since 1918, for instance, Wyoming, and some of the other states showing many productive wells and extensive transportation facilities. However, the figures produced, though not of the current year, will prove most interesting.

In one of the accompanying tables a comparative statement is given between producing wells and dry wells drilled in 1918, also the shrinkage in productive wells from 1917 to 1918, although some of the wells at the close of 1918 show an increase over the same date in 1917. This same table indicates the abandoned wells. It might be efficacious to have the public and the utilities commissions observe the number of abandoned wells, the number of dry wells and other shrinkages shown, say nothing of the cost of marketing gas, in order that they might better comprehend why gas must bring a reasonable figure at the burner.

SUMMARY OF WELLS DRILLED

Wells Drilled for Natural Gas in 1918

	Productive			Pro-		
	Dec. 31		Drilled in 1918		Aban- doned in Dec. 31,	duced in Dec. 31,
State	1917	Gas	Dry	Total	1918	1918
Alabama	24	4	4	8	5	23
Arkansas	113	6	....	6	9	110
California	111	18	3	21	18	111
Colorado	13	....	....	....	3	10
Illinois	287	11	21	32	44	254
Indiana	1,830	129	26	155	199	1,760
Iowa	7	2	....	2	1	8
Kansas	2,579	334	229	563	604	2,309
Kentucky	286	45	25	70	21	310
Louisiana	269	46	18	64	38	277
Maryland .....	....	3	....	3	....	3
Michigan	9	7	....	7	1	15
Missouri	47	....	....	....	7	40
Montana	15	2	2	4	4	13
New York	2,078	82	13	95	62	2,098
North Dakota...	7	..	....	....	....	7
Ohio	5,979	614	297	911	425	6,168
Oklahoma	1,433	461	340	801	296	1,598
Oregon	4	....	....	....	1	3
Pennsylvania	14,534	1,276	258	1,534	566	15,244
South Dakota...	30	4	....	4	5	29
Tennessee	12	4	8	12	2	14
Texas	250	27	86	113	46	231
Utah .....	....	1	....	1	....	1
Washington	2	2	....	2	....	4
W. Virginia.....	9,329	718	170	888	360	9,687
Wyoming	35	12	8	20	5	42
	39,283	3,808	1,508	5,316	2,722	40,369

DISTRIBUTION OF NATURAL GAS CONSUMED IN THE UNITED STATES IN 1918

State	Consumers		Domestic			Gas Consumed			Total		
	Number of Productive	Domestic	Industrial	Volume (M. Cu. Ft.)	Avg. Price (Cents) Per M. Cu. Ft.	Value	Volume (M. Cu. Ft.)	Avg. Price (Cents) Per M. Cu. Ft.	Value	Volume (M. Cu. Ft.)	Avg. Price (Cents) Per M. Cu. Ft.
Ohio	2,359	885,876	4,010	98,023,666	32.36	\$31,721,005	45,561,594	26.27	\$11,973,156	143,585,260	30.43
Pennsylvania	1,509	481,275	4,486	59,839,730	31.37	18,772,970	117,300,074	22.16	26,004,250	177,139,804	25.27
New York	342	169,308	641	19,637,845	33.60	6,599,907	703,362	25.49	179,300	20,341,207	33.32
Kansas	412	120,350	877	14,808,432	29.97	4,439,202	19,103,851	13.74	2,625,016	33,912,283	20.83
W. Virginia	407	127,168	1,873	20,968,624	21.02	4,409,125	87,704,820	8.97	7,875,664	108,673,444	11.30
Oklahoma	398	120,507	1,480	21,493,267	20.37	4,379,661	85,168,137	9.79	8,344,703	106,661,404	11.92
California	95	260,767	894	5,901,797	66.78	3,941,560	33,817,144	11.85	4,010,106	39,718,941	20.01
Texas	81	79,865	793	7,212,092	38.75	2,795,265	13,070,621	20.83	2,723,197	20,282,713	27.20
Kentucky	122	90,849	100	7,922,941	30.98	2,454,936	4,277,248	14.92	638,457	12,200,190	25.35
Missouri	34	84,038	186	4,054,772	54.80	2,222,346	456,449	29.83	136,198	4,511,221	52.28
Arkansas	12	21,742	226	3,551,314	31.10	1,104,529	8,677,974	9.98	866,571	12,229,288	16.11
Indiana	931	31,032	284	2,428,003	37.48	910,215	2,088,580	28.73	600,189	4,516,583	33.44
Louisiana	73	24,370	578	4,264,777	20.41	870,587	22,059,373	7.82	1,726,448	26,324,150	9.86
Illinois	186	8,669	90	596,758	40.38	241,024	3,876,260	9.80	379,925	4,473,018	13.88
Montana	6	1,198	1	176,727	35.10	62,048	312	32.05	100	177,039	35.10
Wyoming	25	999	46	189,010	32.34	61,128	4,149,830	2.29	95,043	4,338,840	3.59
South Dakota	31	391	2	20,166	67.46	13,604	22,020	25.00	5,505	42,186	45.29
Alabama	9	102	1	2,600	41.92	1,090	2,000	40.00	800	4,600	41.08
Tennessee	11	6	6	1,442	52.01	750	1,825,283	19.74	360,390	1,826,725	19.76
Michigan	19	12	2	745	100.00	745	428	70.09	300	1,173	89.09
Colorado	17	6	3	2,553	28.39	725	7,550	24.50	1,850	10,103	25.48
Oregon	3	3	....	2,200	25.00	550	....	....	....	2,200	25.00
North Dakota	7	6	....	913	52.02	475	....	....	....	913	52.02
Iowa	7	3	....	1,758	13.93	245	....	....	....	1,758	13.93
Maryland, Utah, Washington	5	1	2	166	30.12	50	25,750	10.29	2,650	25,916	10.41
Total	7,101	2,508,543	16,581	271,102,298	31.35	\$85,003,742	449,898,661	15.23	\$68,549,818	721,000,959	21.29

Our patience will achieve more than our force.—Burke.

Gasoline From Oil Shale

Presented Before the Engineering Society of Buffalo

By DR. RALPH H. MCKEE,

Professor of Chemical Engineering, Columbia University

THE fact that when Drake drilled his first well in Pennsylvania, oil sold for \$1.00 per gallon, and that before his first winter was over, oil was selling for \$1.00 per barrel, does not, according to Dr. McKee, overshadow the fact that from 1910 to 1912 the consumption of gasoline equalled that of the production and from that time on the production has been going out and the price is mounting.

Dr. McKee, believing that these are the conditions, and believing that all of the oil fields in the United States have been discovered, and that a fairly accurate account has been taken of the oil remaining in those fields and believing furthermore that only 60 per cent of the oil now underground is recoverable, has sought that which he feels would appear to be the only possible way out of the oil and gasoline shortage, namely, production from oil shale.

In 1923 gasoline production is quoted as being 4,800,000,000 gallons, 10 per cent of which is said to be casing-head gasoline, and 15 per cent cracked. However, due to the conditions as stated by Dr. McKee that this casing-head gasoline is mixed with lower grade gasoline for the sake of a better balance, this 10 per cent really amounts to approximately 25 per cent of the total gasoline produced. With the lessening of natural gas this 25 per cent as a unit, aside from our oil resources, so says Dr. McKee, is in danger of being snuffed out.

The Doctor stated that the United States is now at the peak of its oil production, and that in about three years the curve on the chart will start downward.

The supply now in the ground, Dr. McKee estimates, at the present consumption, will last for twenty-two years. However, as only 60 per cent can be taken from the earth, this leaves us in fact only 13 years' supply in the ground.

Returning to the position of the gasoline producer, Dr. McKee illustrated his point with the story of a child making up a fairy tale, the child picturing a rabbit being found by a hound. After various and sundry jumps and cross-country difficulties with the hound always gaining the child wound up by having the rabbit climb a tree. At this point, however, the story was stopped by the father who attempted to explain that a rabbit could not

climb a tree. "But", said the child, "it's got to." The gasoline man is in exactly the same position as the rabbit, production is necessary, it can't be done, but it's got to, said the Doctor.

The text of Doctor McKee's written address was as follows:

Gasoline briefly may be defined as a hydro-carbon distillate, usually of petroleum, 90 per cent of which boils below 374 degrees F., and all of which boils below 437 degrees F. It has a density of less than 50 degrees Be. To be a commercial product it must be of slight color and free from certain types of impurities.

Before considering oil shale as a source of gasoline I want to touch upon the technology of petroleum-gasoline production. Twenty years ago all the gasoline used was obtained from the crude, low-boiling distillate of petroleum. This distillate was treated with concentrated sulphuric acid to remove coloring matter, ill-smelling compounds, certain substances commonly called unsaturated compounds and small amounts of certain basic constituents. Following the acid wash was treatment with caustic soda solution, whereupon the treated crude distillate was re-distilled and a very fine quality of product was obtained.

Pennsylvania petroleum is the highest quality American petroleum and yields readily high-quality gasoline but with decreased output and the influx of lower-grade oils from Ohio, Canada, Mid-Continent and the West, it was found that they did not yield in quantity and quality the gasoline yielded by Pennsylvania crude. Meantime demand for gasoline, due to the wide use of the internal combustion engine, was increasing. Accordingly lower grade gasolines began to come in the market. They carried some of the higher boiling kerosene fraction, some color and some of the unsaturated compounds which give a strongly colored product. With lowered standards came increase in the quantity available, but even under these circumstances demand has increased faster than the supply. Hence it has been had to either produce to supply the deficiency with the result that three new petroleum products, viz. casing-head gasoline, natural gas condensate and "cracked" gasoline, as well as substitutes of quite different origin have arisen.

Cracked Gasoline. When a higher boiling petroleum of the type of low grade fuel oil or gas oil, is heated to a temperature around 700 degrees F. direct condensation ensues with the separation of carbon and the

Originality is the one thing which unoriginal minds cannot feel the use of.—Mill.

formation of light-boiling constituents of the type of gasoline and kerosene. This process is called "cracking" and the lower-boiling of the commercial products thus made is known as "cracked" gasoline. Cracked gasoline carries up to 40 per cent. of unsaturated compounds. Formerly a gasoline carrying as much as 5 per cent. of unsaturated constituents was not desirable for use in an explosive engine. Today much of the gasoline sold is a mixture of cracked gasoline of 40 per cent. unsaturated content. In New York it is not uncommon to have put in one's car a gasoline carrying 20 per cent. of unsaturated constituents, which means that such gasoline on standing and in contact with air discolors and separates, after a time, a small amount of brown tar-like deposit. The automobile of a few years ago would not run on present-day gasoline. With the certain increase in the content of unsaturated compounds, we must look to the engine designer to keep up with the changes in the type of fuel available.*

The cracking process most largely used is that devised by Dr. William M. Burton, a chemist now president of the Standard Oil Co. of Indiana and the recipient, January 13, of the Perkin Medal, awarded by the American Section of the Society of Chemical Industry for notable attainments in the industrial applications of chemistry. The Burton process is used by Standard Oil Companies and licensees with an approximate daily yield of two million gallons of gasoline.

Burton starts, as do all cracking processes, with a cheap petroleum residuum, preferably of the Pennsylvania mid-continent types. The distinctive feature of his process is that he heats under a pressure of 75 pounds and does not relieve the pressure until after the vapors have passed through the condenser. The oil is heated by direct fire in a steel still tank at a temperature varying during the process but which averages about 700 degrees F. Any cracking process is handicapped by the deposition of coke on the bottom and sides of the still, the Burton process suffering severely in this respect. The original patent claims that the product is free from unsaturated compounds. However, the product as at present made does not carry a considerable percentage of unsaturated constituents. The process is fairly cheap to operate but suffers as stated from heavy flinty carbon deposits, high deterioration of stills, danger to operators, and also because of products formed which are too unsaturated to be of the highest grade.

Rittman and McAfee

Other workers have attempted to get away from the troubles of the Burton process, particularly the heavy carbon separation and unsaturated character of the product. Rittman while a graduate student at Columbia University developed a process by which the cracking is effected in the vapor phase instead of as a liquid. His apparatus consists of externally heated vertical 10 in. or

12 in. pipes through which the vapors are passed under pressures which may be as high as 300 pounds and at a temperature of 700 degrees F. By reason of the reaction being in the gaseous phase instead of the liquid, the amount of carbon deposited is small but the products, like those of Burton, are partially unsaturated.

Dr. McAfee, like Dr. Rittman, a Columbia graduate, by a process which has been carried out commercially, avoids the use of pressure and obtains a sweet-smelling, strictly saturated gasoline by a chemical reaction of quite different type from that of Burton or Rittman. He works at ordinary pressure at a quite moderate temperature, say 500 degrees F., heating the oil to be cracked with a few per cent. of its weight of aluminum chloride. Aluminum chloride reacts with the oil to form a coke-like carbon and low-boiling hydrocarbons suitable for motor fuel. The uneconomic recovery of the aluminum chloride for re-use has been a commercial handicap, the selling price of gasoline not being high enough to permit discarding the chemical after one use.

Casinghead Gasoline

Many oil wells yield at the same time considerable gas as well as oil. This gas is formed in part by the evaporation of the same volatile constituents as are present in petroleum, and which on compression yield low-boiling liquids of naturally high volatility. Gasoline thus obtained from the gas issuing from the casing of an oil well is called "casinghead" gasoline. Its volatility is so high and its density so low that it can be mixed with higher boiling constituents such as kerosene and the resulting product appears to be a gasoline of the ordinary type.

Casinghead gas may be bubbled through a high-boiling distillate such as "gas oil" and the resulting solution of gas in the oil distilled whereby the gasoline is recovered and the absorbent oil is available for re-use. Recovery of gasoline from natural gas also may be effected by the use of charcoal as by Burrell's process* or by the use of silica gel which promises to displace gas oil and Burrell's carbon for this purpose.

Alcohol Blends

In America we have had gasoline cheap and in comparative abundance; this has not been the case the world over. We consider 40 cents a gallon high, but most of the world would welcome gasoline at 60 cents and call it cheap. Europe uses large amounts of benzol, a by-product of coke and gas plants. The "black strap" molasses of raw sugar refining yields on fermentation alcohol which is used in Cuba extensively as a substitute for gasoline. Natal of South Africa has an abundant supply of alcohol from the same source. High price of gasoline in that part of the world has made possible a commercial product called "natalite" which is a mixture of alcohol with about 45 per cent of ether. In America there has been but one commercial attempt to supply a gasoline

*Adapted from Dr. McKee's address on "Gasoline from Oil Shale," delivered before the Franklin Institute, Philadelphia, Pa., on January 12, and soon to be presented in full in the *Journal of the Franklin Institute*.

*"The Charcoal Method of Gasoline Recovery," by G. A. Burrell, G. G. Oberfell and C. L. Voress. *Chemical Age*, Sept., 1920.

When a man looks into a mirror he imagines that he sees the reflection of a hero.

substitute, viz., alcogas. These substitutes have their respective advantages and disadvantages.

In Europe benzol is decidedly cheaper than gasoline, but it is harder to start the engine and carbon deposition in the cylinder is greater than with gasoline. The shale motor spirit of Scotland often runs 60 per cent of unsaturated constituents and accordingly is strongly odored, somewhat discolored and cannot be stored for any considerable time without loss of quality. The alcohol blends of Cuba and Natal, particularly that of Natal which contains ether, give trouble owing to their great tendency to make the engine "knock," and also some trouble due to the difficulty of obtaining them free from acetic acid with its corrosive action on containers. Addition of aniline will reduce and even remove this trouble but its price, \$1.50-\$2.00 per gallon, militates against its use.

The alcogas is a more complex material than the substitutes used in other countries, consisting approximately of one-third benzol distillate (principally benzol and totuol), one-third alcohol products, alcohol and ether and one-third petroleum distillate, principally gasoline. The amount of ether required to easily start the engine varies with the season—in winter 10 per cent. and in summer 5 per cent. The great advantage of this substitute over gasoline is freedom from carbonization in the cylinders, which means ordinarily a greater mileage per gallon than with gasoline, viz., 11 per cent. On the other hand the price of the product has been kept above that of gasoline, a handicap arising from variation from time to time in the supply and price of each of the three ingredients.

Future Automatic Fuel Supplies

Prospect of increased supply of petroleum from American wells is nil. The U. S. Geological Survey and the U. S. Bureau of Mines not only show that production approximately is at its peak and that within a few years, probably within three years, output of wells in the United States will begin to decline, but that we should not expect to find any new petroleum fields in the United States. In the past, as at present, the United States furnished approximately two-thirds of the world's production, but we are consuming more than we are producing. In 1919 we imported from Mexico 53 million barrels, in 1920 106 million barrels and in 1921, slightly more than in 1920, amounting annually to about 60 per cent of the total Mexican production of petroleum. Furthermore, the Mexican and Texas fields are of the short-lived type and already in some places are yielding salt water instead of petroleum.

Utilization of Oil Shale—Research of Columbia University

Four years ago a careful canvass showed that relatively little was known about the fundamental factors essential to a successful shale oil industry. For example, almost nothing was known regarding the heat of reaction by which oil is formed from the organic material of the shale; likewise as to specific heats and

latent heats, or of the chemical reactions that control its formation. In the thought that shale utilization eventually would become an important industry and that knowledge of these fundamental factors were essential to its proper development, we undertook their study at Columbia University. Since that time I have had four graduate students working on various parts of these problems, which work, while far from complete, has yielded results of the utmost importance. Methods used and data obtained I have not time to discuss; I can give only the results.

One of the most important factors entering into the design of a proper shale retort is knowledge of the amount of heat absorbed or evolved in the formation of oil from the organic matter of the shale. One of our men devised the first apparatus capable of determining directly this factor, and found that heat was absorbed in the process and that the amount of heat absorbed was nearly the same for shales from different sections, amounting in general to about 450 calories per gram of oil and gas produced, or 160 B. t. u. per pound of average shale retorted.

It has been thought generally that the organic matter in shale decomposed on heating to form the oil as the primary products of decomposition. Researches in our Chemical Engineering Department show that this is not the case, but that the primary decomposition product is a heavy, solid or semi-solid bitumen and that the oil is formed by a secondary cracking process from this semi-solid bitumen. This cracking process is in the liquid phase similar to that of the Burton process. Further it was found that the decomposition temperature of the shale was quite definite, with 400 degrees and 410 degrees C. as its limits.

The investigations also have shown to be incorrect the belief which has been held by many working on the development of shale oil manufacturing processes, viz., that on heating, gasoline is the first product formed; then on higher heating, kerosene; and on still higher heating, lubricating oils, etc. In other words, it was shown that what happens on heating oil shale is that all these products are formed simultaneously by the cracking of the semi-solid bitumen formed first.

Characteristics and Yields of Oil Shales

Oil shales vary not only in yield of oil per ton of shale, but also in type of oil, type and character of minor constituents and also even in the gangue which carries the organic portion. In Scotland are worked shales which yield but 20-22 gallons of oil per ton of shale mined. Large deposits of shales in this country give a much higher yield; the largest of these are the Green River shales of Colorado, Utah and Wyoming. There also are large deposits in Nevada, California, Kentucky, Indiana, Ohio, New Brunswick and Nova Scotia, and smaller deposits, though large enough for commercial exploitation, in many other portions of

His satanic majesty smiles every time he sees a stingy man.

this continent. There are similar deposits in other parts of the world.

Of those deposits which are likely to be exploited in the next decade, we have variations in yield from 20 gallons to 60 or even 80 gallons per ton. The large deposits of better grade will give about a barrel (42 gallons) of oil per ton of rock. The character of oil produced in some cases is apparently a straight asphalt-type petroleum similar to California well-petroleum. Other shales give a large quantity of paraffin wax of even better quality than that given by the best oil wells of Pennsylvania's history. In the opinion of the writer the average petroleum to be made from American oil shale will resemble most closely the petroleum obtained from the present mid-continent field, such as the Oklahoma oil.

It is not commonly appreciated how large these oil shale deposits are. If we consider only those oil shales which will furnish a barrel (42 gallons) or better of petroleum per ton of shale we have in the Green River section alone in known deposits sufficient to furnish 64 thousand million barrels of petroleum, which amount is eight times larger than the total of the well-petroleum that this country has produced since Col. Drake drilled the first oil well in 1859 at Titusville, Pa. It is more than five times the total production of the world since well-petroleum became commercial sixty years ago.

Cracking Crude Shale Oil

If we are to have gasoline in quantity from oil shale, we must make the crude shale oil and then crack it by some one of the oil-cracking processes. If the Burton process is used, the gasoline so made will not be one of high quality. It will be strongly odored, will color on standing, and will be inclined to carbonize in the cylinder. However, its heat value per gallon will be greater and accordingly in a properly designed motor it should give a slightly higher mileage than old-fashioned gasoline.

On the other hand, if we used the McAfee process of cracking, we would get stable, water-white, well-keeping, pleasant-odored gasoline of the old type. However, it is to be remembered that the McAfee process is a more expensive type of oil-cracking. At present in Scotland they are using the ordinary scheme of cracking in which considerable quantities of unsaturated compounds are formed, as high as 60 per cent. This motor spirit is generally used and is not considered by the public in that country to be of lower grade than gasoline from well-petroleum.

In distilling most oil shales there is formed simultaneously considerable quantities of ammonia from the nitrogen constituents of oil shale. This ammonia is usually absorbed in sulphuric acid, recovered and sold in the form of ammonium sulphate for fertilizer uses.

A shale oil plant, then, to be successful must be able to handle cheaply and efficiently large quantities

of oil shale, distilling it to get the crude oil and ammonia and then crack and refine the crude oil to get a commercial motor spirit. The Scottish plants do this, excepting that they devote considerable attention to the recovery of paraffin wax, and it is only the oil left after the wax recovery that is distilled to give lubricating oils, gasoline and burning oils, or is cracked to give shale gasoline.

The Scottish shale retort is one of the vertical-pipe type. When we attempt to handle American oil shales in this retort we find that it gives trouble owing to the pieces of shale caking and adhering to the sides of the retort. This caking of the shale lumps stops the passage of the shale through the retort. For use on most American shales it is quite apparent that we must either modify this Scottish retort or devise retorts on new lines. The Scottish retort is designed with the dual purpose of recovering ammonia from the shale and obtaining oil. With the American shales we have larger amounts of oil, but ordinarily distinctly less ammonia than is produced from the Scottish shale. Therefore, the retort to handle the American oil shale properly must be designed primarily for the production of oil in quantity and of acceptable quality, and only secondarily for the production of ammonia.

There are more than a score of retorting schemes which have been proposed by various American inventors. None of these yet have produced shale oil in large quantities. The most completely developed plant and process are those of the Catlin Shale Products Co., at Elko, Nevada. It has a plant which has produced approximately 100,000 gallons of shale oil. They have a small commercial refinery almost completed and it is probable that the first shale oil and shale gasoline to be marketed in quantity in America will come from this plant. There are several other types of retorts which have been proposed for use in distilling oil shale which probably would, if given proper technical study and trials, develop into commercial processes. At present few believe that any one of these retorts is certain to be practicable when used on a large scale. The ideal process will be one permitting continuous operations on a large scale with minimum labor and with the recovery of good yields of commercially utilizable products.

It is only within the last five years that serious attention has been given to the question of the development of a proper type of retorting still. We have no reason to think but that well before the same length of time now will have elapsed we will have succeeded in obtaining a retorting scheme which can handle with low labor costs efficiently and economically American oil shales.

It is not commonly appreciated with how few men a chemical manufacturing plant can be run. Generally speaking, in such processes labor is a minor factor, but in connection with most of the retorting processes yet proposed labor and power requirement

To do what is impossible for talent is the mark of genius. Amiel.

ge and will be approximately one man per barrel of refined product, if mining as well as refining and re-refining are included. This is the labor requirement, but we must reduce the requirement if we are to have in America a successful shale oil industry.

I show you that the demands for petroleum are rising in this country at the rate of about 100,000 barrels a year. If this continues, it will mean each year seventy-five new plants, each handling 100 tons of oil shale a day and representing an investment of close to a million dollars each to give it oil to meet simply this yearly increase in demand for petroleum. We have no other source of oil or gasoline substitute in prospect which will furnish even a minor part of this demand. In short, we have reason to look forward to the use of oil shale as a very profitable chemical producing industry which will rank with our other industries in its labor and capital requirements and value of output."

KEEPING IN TOUCH

THE State College at Ithaca, N. Y., reports that the best and most successful farmers nowadays subscribe to farm journals, which they, in large measure read during the winter time, thereby to keep in touch with that which goes on in the world. They gather and bring to them in their magazines. They learn thus of what other farmers ought to do, and they do it, touching upon the various problems of the farm, greatly benefiting accordingly. I take a lesson from this bit of recent information brought to our attention, and note the point at

which a trade paper is a most valuable help. It aims to meet the needs of the readers of its field, and of the industry who make it a point to read it. The many valuable suggestions the successful men bring them, are indeed large gains. I know a large percentage of readers in the gas field in the United States and commend these many men for their far-sightedness, yet those who are not as yet subscribers of EVERY ISSUE are not subscribers to their own names at their own addresses, and those who do not now and again a copy of some fellow subscriber, you are missing much that would be of value to you. Become a subscriber yourself. Every issue, you will agree that \$2.00 spent to be for a year is two dollars well invested. Consider it is less than three fifths of a cent a day, or less than four cents a week, while every number contains interesting, valuable, and helpful articles and suggestions.

Now you will wonder after receiving the GAS STRY magazine regularly, why you had not subscribed before. Send \$2.00 and become a subscriber. You will best enjoy YOUR OWN copies.

EACH ONE IS THE COMPANY

IN a recent address by Joseph H. Cline of Houston, he made the following statement regarding that which is so frequently lost sight of, namely, "It's true that each one of you is the company when you are talking to a customer."

The public feels it to be the case that when talking with an employee, it is actually talking directly with the company, and owing to this condition it is most important that employees should be selected not at random, but with regard to their fitness, reliability, tendency to speak facts rather than to exaggerate, and inclination to render true service rather than to superficially gloss over a condition, in order to accomplish temporary relief from, for instance, complaint, if it be a complaint that is brought to the employee's notice.

We do not advocate the taking of responsibilities upon the shoulders where employees are not perfectly certain that such will be in accord with the ideas and desires of the chief. We do, however, advocate the assuming of responsibilities where the individual is certain of his ground and that even an error will not implicate the institution.

Employees of gas companies should be instructed and guided, not in the art of evading an issue as has not infrequently been the case in the field, but of meeting an issue fairly and squarely, and with all frankness, asking if not immediately regarding a question, that the matter be referred to the chief in whose hands are the policies and the guidance of the company.

Be frank, be honest, tell facts, don't exaggerate. Refer, if necessary, but don't leave the impression that there is any underhanded reason why you cannot make answer.

The meter reader, the fitter, the commercial man, the collector, in fact every employee of the gas company should be instructed not in rules, but in real conditions, "cards on the table face up," that he in turn may so frankly and honestly meet criticism and question therein to create that most valuable asset, confidence on the part of the public.

LEASED PUBLIC UTILITY

Status of Such Property When Leased to Private Company by Municipality

United States Supreme Court

THE Illinois Public Service Commission, which has no jurisdiction over rates for water service furnished by a municipal plant, has determined that a public utility leased to a municipality by a private company is now the free municipally owned and therefore not under the commission's jurisdiction.

A mind without occupation is like a cat without a ball of yarn.—Duffield.

Foreman Training Classes

An Important Phase of Government Work in Gas Appliance Field

By THOMAS E. JONES
Instructor of Foremanship, Cleveland Public Schools
Especially Prepared for the "Gas Industry Magazine"

FOREMAN Training Classes at the Reliable Stove Company of Cleveland, Ohio, are being conducted under the auspices of the Smith-Hughes Federal Law for the promotion of vocational education. The officials of this company were among the first in Northern Ohio to take advantage of the provisions of this measure. The classes are now in their second year. In order to determine their value, one must of necessity ponder long over the aim of the course. It must also be remembered that the students are the newest in any field of educational endeavor.

First and foremost, the aim of the course is to make men think. We are told that higher executives are paid for thinking. We believe such to be the case. However, executive ability fails to function very often because "some-one" in the organization did not think along parallel lines. Foreman-training aims to develop the type of co-operative thinking so much needed in business administration. When the foreman sees the perspective of the job, he readily sees that a healthy amount of straight thinking is necessary to hold it.

When men of red blood see a big job entrusted to their care, they become modestly proud and interested. The stimulation of this pride and interest is also a specific aim of the Foreman Training course. Generally speaking, interest in the means of a livelihood diminished with the passing of the craftsman. Seeing himself as a member of the business organization, with personal responsibilities and obligations to other members the foreman's job looms large before him. To intelligently direct the forces of industry, the foreman must see, feel, and above all believe that his job spells responsibility.

The foreman and executives of the Reliable Stove Company have co-operated in every way possible towards the realization of the foregoing aim. Two classes are conducted in the factory every week, one for executives and one for foremen. The executives' class is made up of the General Manager, Assistant Manager, Superintendent and staff, Purchasing Agent, Accountant and Employment Manager. The foremen's class is composed of the heads of the various factory departments.

Realizing that the foreman is the man between the management and the worker, and that industrial "indigestion" is due to a lack of understanding between these two parties, problems in human relations form the major part of class discussions. The job of being a production foreman is viewed from three angles: organizing, supervising and "housekeeping". These three viewpoints suggest certain problems that test

the managerial skill of the foreman. Discussed in the light of the principles of psychology the foreman is better equipped to prevent their recurrence.

If any material factors affect the smooth running of a department, the same are noted and made the basis of discussion in the executives' class. In this class it is understood that all the members are good sports. Practical problems "come up" from the foremen's class and their solution is demanded of the executive. The "buck" resteth in this class "at the feet" (or on the head) of some executive. He sees that it is better far to remove the cause than to pass it on to some unsuspecting "brother".

The position of the instructor of these two classes may seem embarrassing at first, but such is not the case. It is rather interesting, if not fascinating. The instructor is not in the employ of the company. His attitude is one of strict neutrality. Standing on a foundation made up of certain fundamentals, he sees the straight and narrow way along which he must proceed. A slight turn to the left or the right would undoubtedly mar the success of the undertaking. The General Manager of the Reliable Stove Company regards the instructor as a "cobweb sweeper"; the Assistant Manager labels him as a "disturber of the peace". The other members have not expressed themselves. However the reader will deduct that the major function of these classes is to reveal things as they are and direct the ability of all interested to bring about a remedy—if a remedy is needed.

As to results, would that they could be measured! There are evidences of heartier co-operation between the department heads and executives. Material factors such as stock delivery, storeroom organization, department records, tool room, service and overhead expense are regarded by every member of the Reliable family as practical elements in the interpretation of the "mystic" word co-operate. The "ground" at the Reliable Stove Company's factory was fertile long before the introduction of the course.

They have an employees representative plan that is workable and above all acceptable. It has stood a severe test. Regarding the foreman as the latest acquisition to student ranks, and realizing that his preparation has been neglected of some years, one must be tolerant in measuring the results.

Impress upon your foremen that it is necessary for them to think; convince them that they are a part of your business organization, and you, Mr. Executive, will get reward, the scope of which will exceed your expectations. There is every reason to believe that these hopes will be realized at the Reliable Stove Company Division of the American Stove Company. The atmosphere is healthy.

A man's duty, according to his own ideas, is not in accord with his neighbor's.



MAKING THE GAS COMPANY SWEAT

WE have at times heard the community likened unto a Turkish bathroom, and the public utility likened unto a Turkish bath taker; the latter undergoing a sweating process conducted by the former.

In a recent bulletin of the Buffalo Athletic Association, the accompanying illustration was used which did seem to further crystalize the thought. In this illustration let the cabinet to the left be viewed as the public, the cabinet to the right the press, and the individuals as local utilities, the local gas-man to the left and the other most likely utility to be put through the heat cabinet process, namely, the local electric railway company, to the right.

These two would seem to be conversing, while each is being parboiled, the one by the public, the other by the press. The one in the press cabinet is smiling, the one in the public's cabinet is frowning, this difference arising from the fact that while the press may censure, the public is the real element with which the utility comes in personal touch, and, therefore, a lack of good public opinion is even more to be regretted than a lack of good opinion on the part of the press.

The time will surely come when all utilities like other institutions in the community, will be considered as honest, straightforward, and dependable. However, because of various oldtime methods of public utilities, some such being in vogue for years in the past, it is not surprising that there should be an interim during which

utilities must pass through the stage of recovering from the results of a former somewhat diseased condition. We are passing through that stage in these days, and public opinion and the press are endeavoring to sweat the supposed badness out of these institutions which, they expect, will thus come from the cabinets freed of the ills they fell heir to and that in instances actually did course through their veins.

Of course, it is trying, this hot cabinet treatment, especially as the utility of today is by no means the utility of the past. Many of the corporations are already entirely out from under the ban of secrecy and practices that have in some instances existed. Practically all, let us say, are in one and another way undertaking to the best of their ability to have their methods, conditions and circumstances well and clearly known to the public, that they and the public may live in harmony.

Writers are urging frankness, speakers at gas conventions are urging frankness, the far thinker is advising frankness, and when all utilities have fully "come across" and have all adopted that method, the people's hot treatment cabinet, and the press's hot treatment cabinet will practically be things of the past. We must not forget that it has not altogether been the fault of the people and the press in the past days, nor should the public and press believe that all of the fault, by any means, has been with the utilities; furthermore, that the utility of today is not the utility of the past is a fact that must not be overlooked by both public and press.

Language conceals some thoughts and renders some conspicuous.

The Dollars and Sense of It

Human Relationship Problem a Most Important Factor in the Industrial Development of America

By JOSEPH B. GROCE

At the annual convention of the New England Association of Gas Engineers, the following very excellent suggestions were offered by Mr. Groce. In our last issue we referred to this address, quoting a few remarks from it, but herewith we give our readers the text in more complete form.

Mr. Groce centering attention upon that element which is of so great importance, namely, "Human relationship"; his remarks were as follows.—*Editor's Note.*

REFERRING to that important element in business, "Human relationship," let me illustrate what I mean by relating one or two stories.

When the present Erie canal was being built, Secretary of State Hughes was Governor of New York. He found, on looking over the plans of the canal that adequate arrangements had been made to take care of the mules that towed the canal boats, but there were no rest places for the human beings who ran these boats.

A certain business I know had a man in its employ for over ten years, doing laborer's work and driving a tip-cart. Someone asked the old fellow one day how he liked the company he was working for, and how they treated him. His reply was, "I was sick the other day, and so was the horse. They sent for a veterinary surgeon for the horse, but they sent me home and docked my pay for the time I was out."

Old Commodore Vanderbilt was the fellow who said years ago, "The Public be damned," but the New York Central Railroad today is one of the leaders in public advertising for the good-will of this same public.

You will agree with me, I think, that times are changing. The American people have always been an independent thinking people, and since the great war, they are more so. Some of you men here today were over across, during the war. Since you have come back home you are different fellows. The small and petty things of life do not interest you. It's the big, frank, open, face-to-face, and eye-to-eye things that really count. Cards on the table, face-up, a spade a spade—that's the way you want people to treat you, that's the way you want to live.

That's the spirit that has been developing in the industrial world, slowly but surely, for some years now. Capital and labor—employer and employee—man and management. How are they best getting on? By laying

their cards on the table and talking over their common problems, man-to-man, in the open.

In my judgment, this development, this human relationship problem, is the most important factor in the industrial development of America today. And the big industries that are meeting this problem in the open, are the industries that are most successful. Had I the time, I could prove this to you by scores of actual cases.

You and I represent a big industry—the Public Service Industry. It is one of the biggest in this country. This industry as an industry, has many problems, but it has two problems bigger than any other.

The first—*human relationship with its employees*—it is handling better than most other industries. After considerable study of this problem, not only in New England but throughout the Middle West, I am convinced that the telephone companies, the electric light companies, and the gas companies are doing more to help their men and women help themselves; have always had a greater regard for their, old faithful employees, than any other industry I know. If Mr. Barnum were here, I should like to tell him the attitude of the Boston Consolidated Gas Company toward its faithful, old employees is one of the finest things in the industrial life of Boston today.

But the other big problem—*human relationship between the Public Utilities and the Public*—or, the problem of *Public Relations*, I regret to say I think you have handled badly. Perhaps it would be better to say you have not, up to recently, been handling it at all.

You are gas men and have been making gas, and selling gas. How much real effort to get the good-will of the public, whom you serve, has your company made in the past ten years? Your companies have been attacked on every side, by blatant politicians and scurrilous newspapers, and yet they have remained silent. You've been called rascals and thieves by ignorant and unthinking people, whenever you've asked for higher rates, and yet little has been done to stop this hue and cry.

Mind you, some of it never can be stopped. But, I think you agreed with me when I said, a little while ago, that the American people have always been independent thinking people, and I hope you will go further with me and agree that, on the whole, they are a fair-minded people. Leading representatives of the Public Utilities of New England have come to this conclusion, and in order to help educate these fair-minded people

The man who fears nothing is as powerful as he who is feared by everybody.—Schiller.

better understanding of their Public Utilities for all is said and done, they are *there*. have established the New England Bureau of Public Service Information, which I represent here today.

at the work we of the Bureau are trying to do is a small part in the solution of the problem. You men in the field are closer to the firing line. It is that through our Weekly Bulletin we are getting a column of reading matter into the papers of New England, giving reliable facts in regard to the Public Utilities, and in this way are helping to educate the Public—a better and fairer understanding of the Public Utility Industry.

at you, in your personal contact with customers, naturally, in your daily travels from home to home, supplement this work of ours, and make it the coming of better times for the Public Utility Industry.

at a time that every one of you are *the* company, even are talking to a customer. The attitude of a company toward the Public is gauged by your personal attitude toward the customer. This may seem a trifle matter, but it was not so many years ago when head of the company used to personally see every customer.

not so much *truth* as *truth* that we need to tell the public about our industry. Let's tell him a good proportion of his savings are invested in Public Utilities, even, and when he knocks the Public Utilities, he is robbing his own pocketbook. Let's tell him that his life with his family, his home, would be a pretty place to live in without the telephone, light, power, heat, and transportation by electric cars to and from work. It's the truth, then why not tell him these things? Let's ask him how he liked candles and lambs recently after the ice storm, and then follow that by asking him where he expects the money to come from to repair the millions of dollars worth of damage done the Public Utilities by that storm. Let's help build a warm relationship between our industry and the Public, so that gradually there will develop in the public mind a realization that these Public Utilities, this essential industry is something to be proud of, and not something to sneer at.

No American Public should be made to realize that the Public Utility industry of this great country is of course one of the finest things we have. It has done so that any other industry to make us rich in material wealth, and happy and contented in our home life.

We can then talk about these things. And talk honestly and honestly. We've admitted, haven't we, that the American Public is independent thinking, and unguided. Then gradually these truths are going to enter the mind of the Public, and its attitude is even going to change.

Now, my idea of the work that has been laid out for us, the New England Bureau of Public Service

Information. It is along these lines that you can all help in this work.

The other day, John B. Rogert died, one of the most noted newspaper editors this country has ever had for 17 years in the New York Sun with Charles A. Dana. Rogert was the originator of that oft quoted remark, "When a dog bites a man, that is not news. It happens so often. But when a man bites a dog, that is news."

Thus, for years, has been the attitude of most of the newspapers in regard to the public utilities. When a gas plant blew up, or people were asphyxiated by gas, that was news, and they printed only that kind of stories about us. But the newspapers today, with a fixed public policy, are realizing that the Public Service Companies are run by red-blooded human beings, with brains and vision, and are seeing that the prosperity of the whole country is more dependent upon the fostering of our Public Utilities than upon any other single factor.

If this were not so, the letter which I am going to read to you under date of November 4, 1921, could never have been written. This letter was written by Stanley W. Rogert, Managing Editor of the Business Section of the Philadelphia Public Ledger, one of the most influential newspapers in this country.

November 4, 1921

Mr. James M. Bennett
United Gas Improvement Company
Philadelphia, Pa.

Since I learned that you were to meet with the gas industry representatives at Chicago, I have felt that you could do something toward getting out some of the news of the utility companies, which is of interest to business men, readers, and the general public as well.

What you have done here in frankly and freely supplying us with news is an illustration of the point in mind and demonstrated that the public utility companies, the newspapers and the public, all benefit from a free discussion of these matters.

It used to be that some of the editors of those who represented them, naturally, would have nothing to do with the newspapers of the public. There is a new basis of news relationship, and many mistakes have been made. You have been a part of this new order, just as the Illinois committee on utility investigation and of the Public Utility Information Bureau.

The thing that stands in the way of the abandonment of the old order is the old propaganda idea, that is, and where there are really to supply news, minus propaganda, that you have been willing to supply upon request and material which in the past has not been available. It is just a fair way of doing things.

There is a great deal of work to be done. The utilities certainly are not going to the public, and it can do no harm to keep the public advised of their progress.

Opportunity is more powerful even than conquerors and prophets.—Disraeli.

their needs, etc. It would be fine if this news could be put out more generally on the real news basis which you are following.

Very truly yours,

BUSINESS SECTION, PUBLIC LEDGER,

(Signed) Stanley W. Bogert,
Managing Editor.

Let's all of us, then, get together in this work of education, with heads up, and a proud step—cards on the table, face up—calling a spade a spade, but giving as good as is sent, for in our hearts we know we're working for the greatest industry in America today, and we furthermore know, sooner or later, the American Public are going to realize and appreciate our worth. The time has not yet come, thank God, when we cannot trust the American people—if they are told the truth.

GROUP LIFE INSURANCE

THE San Diego Consolidated Gas & Electric Company conducts a group life insurance benefit after the following manner:

Each employee who has been continuously in our employ for six months or longer will be presented with a paid-up life insurance policy, on which the future premiums will be carried by the Company as long as insured remains in our employ. The amount for which an employee is covered is based on the length of service and is graded as follows:

After Six Months	\$ 500.00
One Year	750.00
Two Years	1,000.00
Three Years	1,250.00
Four Years	1,500.00
Five Years	1,750.00
Six Years	2,000.00

The amount of insurance will be automatically increased until the maximum amount (\$2,000) is attained.

At the end of the first six months of service the employee is requested to bring to the attention of his superintendent the fact that he is entitled to insurance.

Employees whose service with the Company terminates for any reason whatsoever, may continue this insurance, without physical examination, if application is made to the Equitable Life Assurance Society within thirty-one days after termination of employment.

It is interesting to note that the Company is now paying the premiums on \$553,000 of Group Life Insurance.

This feature was instituted in November, 1920, in appreciation of the loyalty and efficiency of employees.

Since its adoption, to December 31st, 1921, \$8,000 in death benefits has been paid to beneficiaries of deceased employees.

When it comes to the social side, let us tell you that there were 250 in attendance at the very gorgeous costume masked ball held a recent Saturday evening by the

Employees Association of this live company.

The 1922 officers of the Employees Association are: President, W. H. Ellison; Vice-President, T. E. Hartigan; Secretary-Treasurer, R. B. Tallman; while the directors for this present year are as follows: Gas Distribution Department, D. H. Perkins; Electric Distribution Department, H. N. Peck; Electric Meter Department, Sam McGovney; Shops and Stores, W. T. Hanrahan; Garage, R. B. Campbell; Station "B", R. E. Thompson; Suburban Districts, W. A. Lambert.

VALUE OF SERVICE AS IT AFFECTS RETURN

Electrical World, A. G. A. Abstract

THE Public Commission of Pennsylvania, in dealing with the rate of return, has declared that the problem relates to "not what will pay a fair return in the statutory meaning of that term, but rather what is the reasonable rate which a respondent may charge for service that it may properly function and perform its public duty, so long as it remains a public utility securing thereby the maximum revenue it is able to collect to pay operating costs, and any balance that remains to be applied as a fair return..... Rate regulation does not include a guaranty of return on fair value unless such return can be properly earned." In formulating its rates, the commission asserts, a company is bound to take into consideration the extent of territory and population of the community it serves, and the needs, convenience and necessities of its patrons are also factors to be considered.

ABOUT THE CAMPS

SANITATION is a most important factor in the successful development of new gas and oil fields, declared A. W. Ambrose, chief petroleum technologist of the Bureau of Mines, before a recent gathering of Pan-American diplomats. Everyone is familiar with the fact that the construction of the Panama Canal was greatly delayed until problems of sanitation were conquered, said Mr. Ambrose. The health and contentment of the workers is a necessary adjunct to such a plan and companies should be urged to provide healthful and comfortable quarters for their men. If the camp is to be a permanent one, companies should also install adequate sewer systems. Where the camp must be built in a marshy locality, care should be taken to drain the camp site and surrounding territory to prevent the spread of malarial diseases. The value of amusement halls and the promotion of social life in isolated communities cannot be overestimated, for the contentment of the staff and workmen is essential to successful development.

An interesting article upon this subject was published in the GAS INDUSTRY Magazine for January.

Philosophy goes no further than probabilities, and in every assertion keeps a doubt in reserve.

The Problem of Selling

"The Gas Companies Should Invite the Fullest Publicity of the Press. The Critical Situation in the Gas Industry Seems to Arise From the Fact That the Public Knows so Little About the Industry"—

Charles C. Parlin

ROUNDS of applause followed an address by Mr. Charles Coudridge Parlin of the Division of Commercial Research of the Curtis Publishing Company, Philadelphia. This address was delivered before the American Gas Association at Chicago. Those who applauded were gas engineers, gas managers, gas company presidents, as well as commercial managers and commercial men of many gas companies. Mr. Parlin said:

"In any industry the problem originally is production and only when production has reached a stage where sales resistance is encountered does the need of selling become clear. Such a day has come in the gas industry, and today the greatest problem of the industry is selling."

Now that Mr. Parlin stated that "the greatest problem of the industry is selling." In making this statement, he certainly justified every effort that was put forth to form the National Commercial Gas Association, and to develop systematic gas and gas appliance selling and sales association cooperation between men in the various gas companies having in hand the selling of gas, as a leader to the selling of gas.

Mr. Parlin added: "The problems of engineering and sales are so radically different that those who give concentrated attention to the one are apt not to succeed well at the other. Engineering has to do with physical phenomena with chemistry and mechanics. Selling deals with the human mind with psychology, imagination and suggestion."

Here again Mr. Parlin commends the forethought and thought that resulted in the formation of a great commercial organization in the gas field known as the N. C. G. A.

While engineering had been the major factor in bringing us in this gas field sales and the commercial side it was seen must of necessity play a great part in the future of the industry against ever increasing competition.

Today, as then, we have evidence of the fact that the two great departments in the gas field, namely, engineering and commercial are mutually inseparable, in other words, each is necessary to the other though each has its separate and specific line of work to perform. The engineering side does not meet the public, but it provides the element for the public, while the commercial side does not provide the element, but does meet the public, or should meet the public, should take the public

into the gas company's confidence and should keep peace between company and public, also between public and company.

Following are some questions asked by Mr. Parlin. These should be mentally answered by the reader.

"Did you ever stop to visualize the contact which the average citizen has with your company? John Jones is a man of intelligence and has used gas for years, but what does John Jones know about gas? He has heard that he gets water gas. Does he know that it is not made out of water? Does he know that oil is one of the principal ingredients, that the price of oil has risen greatly and so far as can be foreseen will not again return to the pre-war prices? He may have read something about candle power. Does he know today that with incandescent burners candle power tests have little significance and that gas today must be judged on the basis of heat performance?"

What does John Jones know about your company? You have published many financial statements. Has any one of them been published in a form which John Jones can understand? Has any one ever explained to John Jones the significance to him of those parallel columns of figures?"

Mr. Parlin went on to state:

"Do these companies make a routine issue statements concerning their financial operations prepared for the tax authorities only? How many of the gas companies have done this?"

Just what contact has John Jones had with your company? Once a month, or once a quarter he gets your bill. It demands payment of a certain sum based on the gas meter. The Gas Association has done good work in educating John Jones as to what his meter means. There is an opportunity, however, for the local companies to send the effort of the association in this direction. There is the outstanding fact on the bill is a statement of the gas used. Many have gas well furnished with the meter reading. Some try to explain that the meter is not a measure of money, require that the meter be nothing more than a meter, that the gas is the thing, but they are the meter men who require the meter. The meter does not measure gas well, it does not.

"If you are a meter man, you are the meter man, clerk who takes the meter reading, and the meter man."

The merit of originality is not novelty, it is sincerity —Carlyle

Jones or is there any place he can ask questions and get informative replies? If so, does John Jones know where that place is? Or does he grow sullen, feeling that somehow he is the victim of a hold-up? The danger to the gas companies is not in the few who complain openly. They can be answered. The danger is in the thousands who say nothing, but in their sub-conscious selves develop a distrust of the gas company.

"The gas industry has concealed the romance of its accomplishments. The telephone and the electrical industries have seized upon the dramatic incidents of this industry. The girl who holds her post as a fire rages receives the plaudits of the press. Who ever saw dramatized the story of the grimy man in overalls who, on a wintry night as furnace fires prove inadequate, furnishes gas for the whole city? The gas supply is put under a supreme strain and only by his efforts is an uninterrupted service kept up. The city is thus saved from hardships and from the disaster which a briefly interrupted service would entail. The whole country, the methods of producing gas, and the financial operations of the companies to the layman seem shrouded in mystery.

"Dislikes are founded on ignorance. People hate that which they do not understand, and today the critical situation in the gas industry seems to us to arise from the fact that the public knows so little about the industry.

"Much has been done by the gas company in the way of service to its patrons. John Jones has come to see very clearly the obligations that the gas company owes him, but what has been done to develop in John Jones' mind a sense of responsibility to the gas industry for its successful operation? He takes civic pride in many things, but does he take pride in the gas company, and in having the service right? Does he feel that he owes a responsibility to his community to help the gas company in the development of its industry?"

Some of the suggestions made by Mr. Parlin are as follows:

"1. The gas company should invite the fullest publicity of the press.

"2. It should train employees so that each employee who comes in contact with the public, either officially or incidentally—almost every employee comes in contact with part of your market in some way—may know what to say about gas, and may be your salesman at all times. In this it must be borne in mind that a salesman effectively can sell only that which he understands and in which he sincerely believes, and that the first sales task is thoroughly to sell your own representatives.

"3. Monthly bills may be revised so that they will be informative and give an impression of fairness and courtesy.

"4. In the local press, a dignified, informative campaign may be conducted over the signature of the gas company, not a splash for the moment, not a defense nor an attack—a persistent, well thought-out campaign of education to enable the public to have an understanding and, therefore, a sympathy with your problems.

"5. A national campaign of education may be undertaken to place a solid foundation under the campaigns of local companies.

"You have an effective and an important story. The interest of the consumer and your interests are in the last analysis fundamentally alike."

Mr. Parlin at this point touched upon that very interesting subject of the gas company and the merchant by saying:

"Where a gas company sells appliances, we believe there should be a separate department for the sale of appliances in charge of a person of sales ability and that this department should be made self-supporting—meeting all its own overhead and other expenses, and showing a net profit on the year's operation. It does not seem a sound policy to require consumers of gas to pay for losses on appliances sales.

"If the gas company operates a sales agency, shall it control the entire business of the city? In some minor places where the potential volume is small, that may seem the best solution, but wherever potential volume is sufficient to support two or more sales establishments competition will develop trade.

"It at least seems clear that where independent agencies are selling good appliances, thereby helping develop consumption of gas, they are entitled to fair competition from the gas company and should not be unfairly prevented from doing a profitable business.

"The gas company's sales department cannot be expected to carry all the good makes of a given appliance. If independent dealers carry some of the good makes which the gas company cannot handle, friendly competition will increase interest in the appliance and build business for both."

Comparing the growths of electricity and gas, Mr. Parlin said:

"The number of gas meters in use apparently exceeds the number of homes wired with electricity, but electricity appears to be rapidly gaining. In some sections, for example, the Middle Atlantic and East North Central, the census figures of 1919 show materially fewer gas stoves and heaters connected with mains than in 1914.

"The most striking fact brought out by the census of 1919, however, was that the value of electric heating apparatus produced in 1919 almost equalled that of gas and oil stoves combined.

"Of the electric heating devices in 1914, more than three-fourths were in cooking devices and flatirons.

"Even if the element of competition between gas and electricity be disregarded, it nevertheless must be a significant object lesson to the gas industry to note what any casual observer cannot fail to see—that the electric industry has its wares better advertised, better displayed, and more efficiently sold.

"In how many cities in the United States today are gas appliances attractively displayed? Let us grant that it may be easier to make a brilliant display of electric lights than of gas heaters, have the dealers in gas appliances done what they might? There are a few fine dis-

It is as difficult to appropriate the thoughts of others as it is to invent.—Emerson.

plays of gas appliances—for example, the one on Michigan Boulevard, in Chicago—but most of the displays which we found were not calculated to draw trade. As you travel about the country, to how many windows of gas appliances are you attracted to look and linger, into how many of these stores do you find yourselves drawn by the display—at how many times is a desire to own a gas appliance kindled—into how many windows do you find an interested crowd wistfully looking?

What has the manufacturer done to help the dealer trim his window and make his store attractive? Have they offered prizes, aroused friendly competition and portrayed nationally the winning displays?

The manufacturer, in turn, says that it is impractical for him to develop markets so long as he has the opposition of gas companies. Improvement in the sale of gas appliances seems to begin with the reformation of the gas company's attitude. The gas company cannot carry all the manufactured articles, but the gas company can give its moral support to every man who is selling good appliances, doing something to develop the use of gas in his community.

The day of easy selling is past. The special requirement of the manufacturer is intensive selling. In the past year manufacturers who sat idly by waiting for people to come and buy their wares, still wait. Those who aggressively pushed their products found there was a market for those who sought it.

In the last analysis the essential problems of the gas industry seem to be the same as those of other industries.

First—Quality

Second—Advertising

Third—Aggressive selling

Advertising is a process of education. The recognition of the merit of a product is the thing which can be gained by advertising. Salesmen must be sent out and what then is the use of advertising if personal sales effort must be used? Advertising is not as powerful as personal selling. The most powerful sales force is the merit of the product itself, and the next most powerful force is that of personal selling. Advertising, however, reaches the people with every appearing.

Right here let us interject the thought that if a salesman were to visit and talk product with five merchants a day, it would take him over a year to reach as many as are reached by a single issue of the Gas Industry magazine, and since buyers and managers are constantly changing in an industry, by the time this salesman had made his rounds of a year, counting no more than those reached by a single issue of our publication, many of those whom he had sought to interest on his first call would have found other positions elsewhere, would have been incapacitated for business through ill health, would have passed away, or, in other words, for one and another reason, would not be found. Thus the initial work would all have to be done over again and the interval between visits would be an entire twelve months, while

advertising comes again and again, renewing the touch monthly between seller and buyer.

Mr. Parlin said of advertising:

"Advertising creates a great opportunity to put out into the efforts of men who are intelligent, to go out and work. Furthermore, it creates a market. When your salesman goes to the door, 60 per cent of all the sales are apt to be made the first time he calls on a customer, and thirty per cent of all his sales may be on the second time, and not more than ten per cent after the second time. It is important that salesmen get the name on the dotted line the first call. There is the opportunity. Advertising prepares the market, prepares the mind, so that the order when the salesman calls, will come much easier."

QUESTIONABLE ADVERTISING

A CORRESPONDENT has sent us a clipping from a Pittsburgh newspaper. The advertisement is a specific one. It sets forth information wholly regarding the advertiser's handling of a certain specific type of range. We will not mention the name of the range, since, no doubt, the makers of the appliance would decry any such statements as appeared in the advertising matter, but it would be passing by a serious matter were we not to print and comment upon that portion of the advertisement which appears herewith, and in which the advertiser directs the attention of the public to a statement made by the local doctor regarding a disease that has caused much consternation, the advertiser quoting the name of a mine given to the disease, then coupling up with it a warning against the use of gas unless it is used in a certain type of gas range. The portion of the advertisement that we refer to reads as follows:

Our dear Motoregas warns us about

"Sleeping Death!"

Our dear Motoregas says

His sure cure for gas has a closed top

We have directed the attention of the A. G. A. office to this advertisement, feeling that official notice should be taken thereof. We have also notified the Natural Gas Association of America of the wording of this advertisement, having previously notified the Bureau of Mines, Department of the Interior at Washington, so that department has been advocating open-top ranges in the natural gas field as in the manufacture of gas itself, with the exception of a certain amount of setting that we believe it does not criticize as wasteful, or lacking in the element of conservatism toward which the Bureau of Mines is strenuously aiming.

Our success depends on how well we can expose ourselves in terms of work. —Nairo Rags

He that can have patience can have what he will.—Franklin.

TRADE-NAME CONTEST

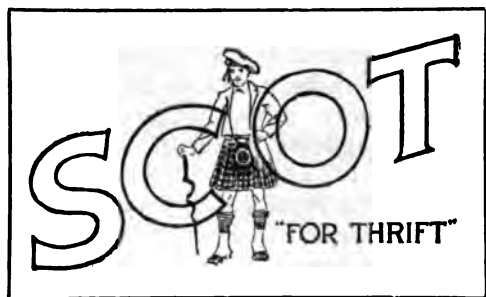
The Prize Winners in the Scott Gas Appliance Trade Name Contest Are Now Announced

AT the recent annual convention of the American Gas Association at Chicago the Scott Gas Appliance Company, Inc., of Washington, D. C., announced a trade-mark-name contest, a name that should adapt itself to the Scott line of ranges.

The first prize offered was an all white enamel Scott Gas Range, valued at \$200.00, and the second prize was \$100.00 in gold.

Due to the illness of one of the judges, the selection of the winning name was somewhat delayed. However, a unanimous decision has now been reached by the remainder of the committee of judges, after careful consideration of all the names submitted.

The winner of the first prize was Frank A. Woodworth of 60 Wall street, New York, of the gas engineering department of the Henry L. Doherty organization. His entry was the "Scot-For Thrift" trade-mark name design, with the stipulation that either "Scot" or "Scott" could be used in connection with the design.



The second prize of \$100.00 in gold was awarded to A. F. Beringer, vice-president of P. W. Brooks & Co., which operates a number of public utilities companies. His suggestion was "SCOTT TRI-POWER", suggestive of the triple usefulness of the Scott Gas Range.

The judges' job was an arduous one, for several thousand names were submitted. They came from every branch of the gas industry and from every section of the country. It was a truly popular contest, with entries by heads of big companies, by shop men, installation men, salesmen and office workers. Many of the names and phrases suggested fell short of meeting one of the chief qualifications of the contest: they were not capable of being copyrighted, as stipulated in the conditions. Mr. C. Hugh Duffy, of Chevy Chase, Maryland, one of the judges, who is a patent attorney, passed on the protectability of the various names submitted.

The Scott company went at this matter in a whole-hearted way and now have a name and name-design that it can capitalize. It is no wonder that the contestants ran up into big numbers; for the prizes were such as to make the proposition an exceedingly attractive one. Watch for the new trade-mark-name on the product and in the concern's publicity matter.

LUNCHING EMPLOYEES

IN an interesting paper by L. J. Joyce of Boston, before the New England Gas Engineers, Mr. Joyce in referring to installations in large industrial plants and department stores, said, "This class of business has grown immensely during the past few years. We have very fine kitchens installed in our department stores. These restaurants are run on the co-operative system and the stores feed their help at about cost. They realize that it is a good policy to feed their employees on their own premises, for they can give them a better meal than they could ordinarily get in a restaurant for less money. Appliances used in this class of business are ranges, broilers, steam tables, coffee and hot water urns."

This system of localizing the providing of luncheons for employes having grown immensely all over the country, has of a truth opened an entirely new channel to gas companies, not that this has occurred all of a sudden, no, it has been a growing matter, but is yet in its infancy. We believe that a live gas manager could personally in smaller centers, not too small for such service, or through the aid of competent sales-service assistants, in larger center, greatly develop the business of his company along these particular lines.

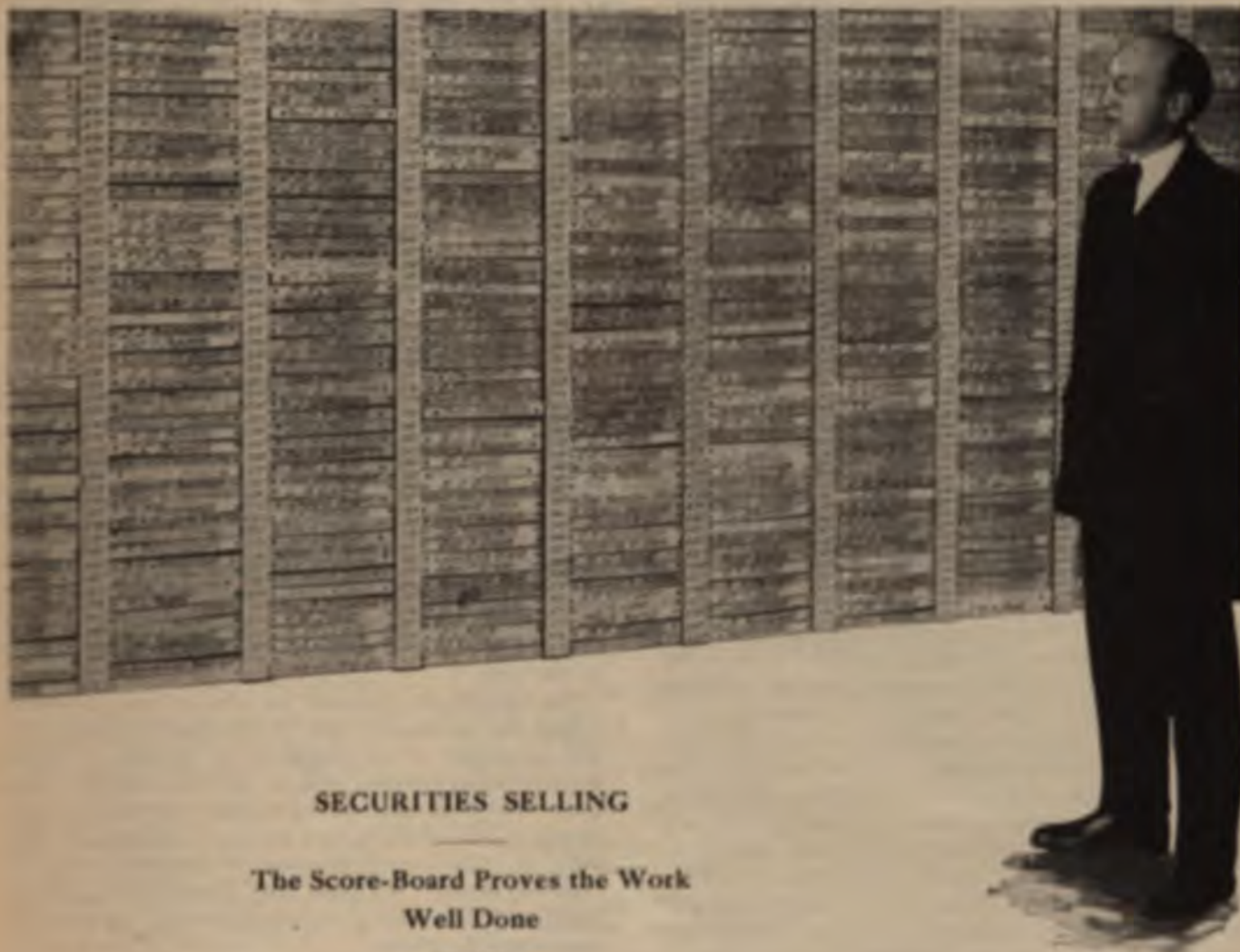
Gas has lost some of its old-time percentages in certain directions, frequently these losses arising from carelessness or inattention on the part of gas managers, but new fields are springing up on every side that will compensate for these losses. However, it is most unfortunate to have lost, even if one gains elsewhere, since an old saying is "It is not what we make, it is what we save." In the field of gas interests, as well as in all other fields, a good slogan would be, "Let us both save and make."

One of the great dangers is that of always going after a new butterfly, instead of making it a first purpose to keep the "home fires burning" as well as to seek new fields to conquer.

Frequently human nature leads an individual into that fairy field of always looking for something new or something different, causing a loss of interest in that which one possesses. The former is commendable insofar as it is not carried to excess, and does not cause a slackening of interest in that which has built a concern from a beginning to a good reasonable result. Employes should be carefully guided, especially men of sales forces, in order that they may be well balanced, they being made to fully realize that to HOLD what they have is a major necessity, while gaining new outlets is a commendable achievement.

Not a few gas companies have allowed their illumination business to slip from them. They have listened to that ever luring siren, namely, the following of the way of least resistance. Those companies that have retained a large percentage of legitimate gas lighting, and have supplemented this business by the opening of new fields are surely to be commended.—The Editor.

Quit the world, and the world forgets you. Disraeli.



SECURITIES SELLING

The Score-Board Proves the Work Well Done

THE Buffalo Athletic Club of Buffalo, N. Y., which is promoting the sale of a vast total of securities, in order that it may erect its new exceedingly complete and beautiful home at Niagara Square and Delaware Avenue in Buffalo, N. Y., has adopted a novel and effective method of creating and continuing interest in its sales campaign. Our illustration is taken from the Bulletin of the Association, and suggests a method whereby a gas company might, following the same plan, cause a feeling of interest and of security in the minds of the public by displaying the names of investors as from day to day the securities are sold or subscribed for in the nowadays plan of localizing a share of the utility's securities.

Suppose on the wall of the gas office a large bulletin were erected wherein cards would be placed bearing names of investors, thus the humble individual in the community would feel some degree of pride in having his or her name appear, while the more opulent member of the community having his name upon the bulletin would lend prestige to the method of disposing of the securities and cause a feeling of security on the part of those who always view certain men of the community as able advisors in the matter of investments.

Another method would be that of temporarily leasing a store in the business center, and there establishing several desks for the use of those selling the securities during the campaign and upon the wall erecting the large bulletin board, this after having sold a sufficient number of bonds to provide a good showing on the board.

If the campaign were to be carried on only through the use of company employees, the bond-store might not be necessary. At the same time, even with the employees as salesmen, they should be guided by some experienced hand, and it might be necessary to go outside of the company to find this experience to be employed temporarily.

If a special store were temporarily leased, it might seem advisable to have the manager of the gas company at this same store during certain hours of the day in a neatly arranged area where he could receive alike the humble and the rich, explaining to them the service of a gas company to a community, the need of a gas company, etc., etc., in no sense overlooking the fact that a cordial greeting by the manager of citizens who drop in to make inquiry, would tend to more closely create a bond of democracy between the public and the gas company that would prove a great asset.

All astonishing things are done by ordinary materials. Haydon.

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The specially occupied store could be made to answer two purposes, one the selling of the securities, but in a major way the bringing of the gas company down from its rostrum, as viewed by the public, to meet the public informally, for the while of the exploiting of security-sales.

If gas company employees are used during a sales campaign of gas securities, the expert in charge, possibly an exceedingly apt bonds salesman could organize teams of two or three to the team with a team supervisor for each section, allotting to these teams certain districts in the city. Then publish in the daily newspapers (paying for the space) the names and perhaps the portraits of the several teams, indicating within what districts the teams will operate that day. Included in the notice should be a little statement regarding the plan and an invitation to watch the bulletin board of investors' names grow at the temporarily leased store.

It would not seem necessary to go further into details, for the inventive mind of the gas manager will easily put the meat onto the bones of such a plan. We might, however, add one suggestion, namely, that in the case of bulletin board use, a photograph of the board when a section of it has been well filled, might be converted into a good cut to be run in paid-for-space in the daily newspapers with the statement that the original, namely, the board itself bearing the names of your neighbors and friends may be viewed at No. 240 Main Street, where, between the hours of eleven and three, the manager of the gas company, Mr. John Doe, and several of his associates would be glad to meet those who are customers of the company, with whom they most earnestly desire to become personally acquainted.

We are quite certain that a bulletin board operated somewhat after our suggestion would be exceedingly helpful to a gas company desiring to locally float a share of its securities.

ANOTHER FINE MOVE

A CALL-TOGETHER of representatives of institutions in Portland, Oregon, handling gas appliances recently was sent out and roundly accepted. Those present were certainly a representative bunch, as plumbing and heating concerns, furnace companies, American Radiator Company, and various other merchandising concerns were represented. The idea of the gathering was to afford an opportunity to propound the question, "Why not an organization of all of those in Portland handling gas appliances, that these institutions among themselves and with the utilities company, might become better acquainted, thereby to discover means to eliminate difficulties and in general advance the interests of gas appliances?"

An association such as was considered and accomplished, will certainly go a long way toward reconciling differences where they exist, and preventing difficulties that do not already exist and yet might dawn upon the horizon. It, at the same time, will afford the "traders"

of the city an opportunity to better understand gas appliances. These various interests will no longer, so it appears, continue without that bettering element which comes with the get-together idea.

A suggestion made by Mr. E. L. Hall, General Superintendent of the Portland Gas & Coke Company, resulted in the carrying of a measure to the effect that the stationery of the organization shall bear upon it the following imprint, "Gas Appliance Dealers Association."

Officers were elected, chosen from among the merchants. Who will follow this move, in other cities?

IN THE RIGHT DIRECTION

MR. P. S. ARKWRIGHT, whom we all remember so pleasantly, those of us who attended the N. C. G. A. convention in Atlanta, Ga., some years since, and who is President of the Georgia Railway & Power Company, recently grasped an opportunity to urge through an address which he delivered before the Retail Merchants Association, a degree of co-operation between merchants and utilities companies, and vice versa far exceeding any such condition existing in the past.

Mr. Arkwright featured the idea of gas companies aiding the merchants, and of merchants assisting the gas companies in an endeavor to develop a better understanding between utilities and the people. There is no doubt but that the merchant is in line to figure largely in the calculations of the gas company, and rightfully so. The merchant must be reckoned with; the time has come! We have long predicted and advised broad and wholesouled co-operation between gas companies and merchants.

PAST PROFITS CANNOT AFFECT VALUATION

Electrical World, A. G. A. Abstract

IN valuing the property of a telephone company, the Nebraska State Railway Commission emphasized the point that the past profits of a utility, even where these have been excessive, have no bearing upon a valuation proceeding, in which all the physical property used and useful in the business of a utility must be considered, notwithstanding that some of it may have been built out of surpluses over and above a moderate rate of return. "Testing the effect of rates in the past," the commission observed, "is a judicial process; making rates for the future is legislative. The two processes ordinarily merge in a rate case. In a valuation case, however, the commission has no power to take part of the property of a utility and restore it to the public or deny its ownership to the utility. In a rate case the commission can take cognizance of the effect of past rates and whether they have been usually remunerative."

Too many young men empty their sand boxes on the first grade.

Why Accidents?

*A List of Accidents and How They Occured. The Exercise of
Care Would Have Prevented Much Suffering*

A STRONG effort is being put forth to reduce the frequency of accidents, as we all well know, accident conferences, conventions, departmental work, etc., all looking to a lessening of loss and consequent costs and financial losses, have averaged within a few years past, and as a means of preventing further recurrence, we are

publishing a partial list of accidents compiled from actual gas company experiences.

If you were to have your men read over this list and then would impress upon them a vision of the misery, pain and distress that has resulted, might not they visualize how the accidents might have been prevented, and so being so treated, see to it that like accidents are prevented in your company and to your patrons.

ACCIDENTS TO EMPLOYEES ON OUTSIDE WORK

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ACCIDENTS TO CITIZENS ON STREETS

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Prejudice is the child of ignorance.—Hazlitt.

Porcelain Enameling

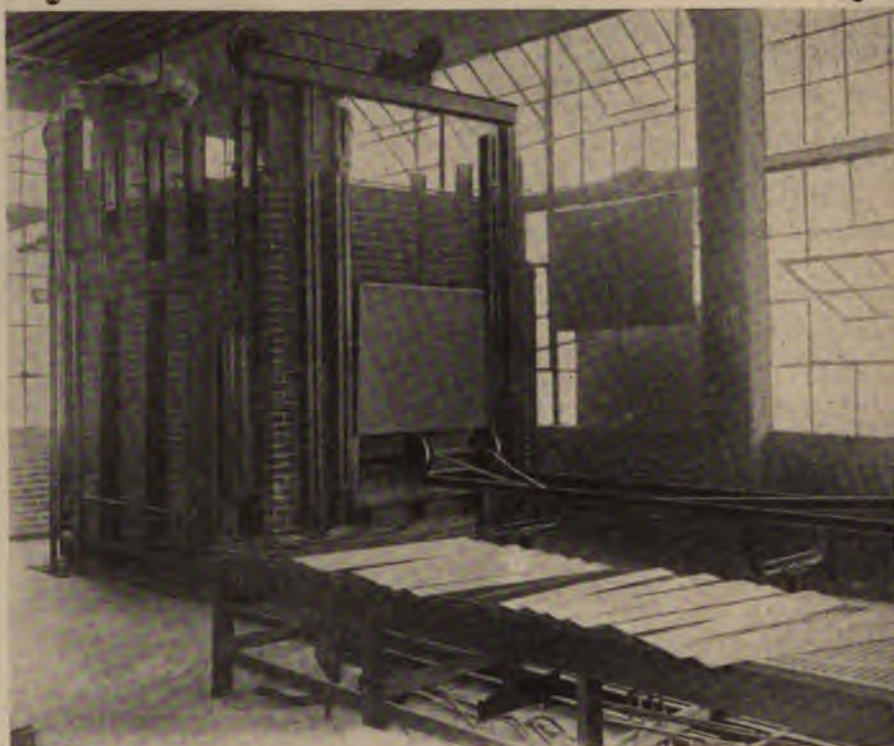
Manufactured Gas Fired Furnace for Porcelain Enameling in Operation at Rochester Foundry, Rochester, N. Y. If Manufactured Gas Can be Economically Used in Large Industrial Installations, the Methods Should be Studied by Natural Gas Interests in Order to Conserve Natural Gas Through Like, Less-Gas-Using Burners

JOHN B. ALLINGTON

THE general application of enamel to household articles is a comparatively recent development and its growth in the past few years has been enormous. Perhaps the most recent development has been the application of enamel to domestic stoves and ranges. The demand for enameled ranges has grown to such an extent that all of the larger stove manufacturers are now installing their own enameling

glass which will adhere to the base-metal and resist corrosion by alkalies, abuse, and expansion and contraction due to rapid changes of temperature.

There are two methods of application the dry process and the wet process. The dry process is in common use in the enameling of cast iron bath tubs, sinks, etc., the cover coats only being sifted on dry and the ground coat applied by the wet process. In the wet process the base-metal is first prepared by thorough cleaning. If



GAS FIRED PORCELAIN FURNACE
Loading Fork is Inside of the Muffle Ready to Deposit Parts
to be Enameled.

departments. This demand is in part due to the excellent quality of the enameling now possible. Enamel is now applied to stove parts so durably that it will not chip as formerly. The tremendous heat of the gas furnace fuses it into the very body of the steel so that when pounded the enameled surface dents with the underlying steel but will not chip.

Enamel is a vitreous glaze fused to the surface of metals and is made in many colors. It is essentially a

cast iron, it is sand blasted to make it smooth and remove all dirt and grease. If steel, it is thoroughly annealed, pickled in an acid bath, and dried in an oven to prevent rusting. The covering operation includes the spraying of the enamel and drying. After spraying it is important that no dust is allowed to settle on the work.

The enamel is fused or burned on at a temperature of 1200° F. for cast iron and 1700° F. for steel. The

It is easier and handier for men to flatter than to praise. Richter.

furnace used by the Co-operative Foundry is of the full muffle type although semi muffle gas fired furnaces are sometimes used for cast iron work. In the full muffle type of furnace the chamber in which the gas is burned is entirely separate from the chamber in which the material is placed to be enameled.

In the illustration the combustion chamber is in the bottom of the furnace and the gas burners are shown directed into this chamber. These burners are of the safety type invented by Mr. Lundgaard formerly in charge of the Industrial Department of this company.

The hot products of combustion pass up and around the muffle walls to the waste gas flues which are in the top of the arch. The muffle walls and floor panels are constructed of fire clay slabs with tongue and groove joints scarcely cemented. These panels are $\frac{1}{2}$ inches in thickness and $1\frac{1}{2}$ inches thick at the joints. The muffle is supported by fire brick piers placed at regular intervals the opening between the piers serving as flues for the burners.

The wall of the combustion chamber around the muffle is made of 9 inches of fire brick insulated with $4\frac{1}{2}$ inches of Silica Insulating brick sheathed with an 8 inch red brick wall thus giving a total wall thickness of 22 inches. The furnace is substantially braced with cast iron back stays and tie rods as shown in the illustration.

On top of the furnace, but not shown in the illustration, is a cast iron sectional recuperator, housed in a $4\frac{1}{2}$ inch fire brick box. This recuperator preheats the air necessary for combustion, reclaiming considerable heat from the waste gases from the combustion chamber before they go to the stack. The air leaves the recuperator at 800° F. to 1000° F., which gives an increase in theoretical flame temperature of 400° F. to 500° F. The overall thermal efficiency of the furnace is thus increased about 20%.

The mixture of gas and air at the burners is controlled by means of a ratometer, another invention of Mr. Lundgaard's. The ratometer and main gas control valve are shown in the upper left hand corner of the illustration. Regardless of gas consumption at any time the ratometer supplies the correct amount of air for complete combustion and the control of the furnace is reduced to the manipulation of one valve in the gas line. This valve is operated by means of a chain at the left side of furnace.

The muffle in this furnace is 42 inches wide, 104 inches long and 36 inches high inside. The furnace has an average output of 5,400 pounds of cast iron one coat in 16 hours on a total gas consumption of 1,400 cubic feet, which is an average of 26 cubic feet of gas per pound of cast iron per coat.

The output of this furnace is of a quality that cannot be surpassed by any method of tusing enamel in use today in this country.

—*Courtesy Gas & Electric Assoc., Rochester, N. Y.*

THE FUTURE OF LIGHTING

MR. S. GULBRANDSEN of Philadelphia in a recent address before the Illuminating Engineering Society, an organization formed some years since for the purpose of advancing the interests of illumination, not by one single process, but illumination produced by any and all processes concludes that the illumination of the future will be that of phosphorescence. Mr. Gulbrandsen said that this might not come for years, but that he feels it is a sure future in the industry. "The present method of lighting, both gas and electric," said he "reminds me of the Chinaman who burned down the house to roast his pig."

A statement that will astound many was as follows: "In both electric and gas lighting but a fraction of one per cent of the energy of a coal pile is returned to us in the form of light." The speaker's theory is that such a condition cannot continue, that some day, as he said, "Some day we shall find a method of producing light without the accompaniment of such a vast quantity of heat. In fact it is already being done in a small way in commercial work." Illustrating this, Mr. Gulbrandsen exhibited an Ingersoll watch, the dial phosphorescent by virtue of a self luminous paint having been used. "Thus," he said, "one can tell time in the dark, the method of producing effect being a mixture of phosphorescent zinc sulphide and a minute quantity of radium or mesothorium. We in the gas lighting business, are interested in this because mesothorium occurs together with thorium in Monazite sand, and is recovered during the process of manufacturing thorium, used in the manufacture of the incandescent gas mantle."

"The problem of the future," said the speaker, "is to make use of our knowledge of results attainable, results with which we are familiar, and then to multiply these many times. This field certainly offers attractive research."

In the meantime communities, individuals' homes, shops, etc., must be supplied with artificial light produced as we now know how, and it becomes the part of gas companies to find and to get as much of this illuminating business as it is possible for them to control and to gain.

It is a transition point, now, then even though this transition is a matter far distant in the future, let it be from gas to phosphorescence, as well as from electricity to phosphorescence, instead of from electricity to phosphorescence, as the electric man would naturally desire to professing that electricity should have entirely superseded gas. The illuminating engineers, phosphorescence might become the universal method.

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Less of men who have traces of greatness in their makeup spoil everything by looking over the traces.

business which can be properly and well handled with gas through the medium of that wonderful invention, the incandescent mantle; a medium not based upon 25 cycle, or 60 cycle throbs that, especially with the 25, the cycle electric system is no noticeable to the eye, but instead is based upon continuous, uninterrupted delivery of illumination nearest, without the intervention of special glass effects, to that glorious illumination which we have in the rays of the sun.

EMPLOYES MENTAL TESTS

By ARTHUR OTIS
Scientific American, A. G. A. Abstract

IN the *Journal of Applied Psychology*, December, 1920, Mr. Arthur Otis, in an article on "The Selection of Mill Workers by Mental Tests," presents some surprising results.

At the close of his army service he installed a system of mental tests for prospective employees (both clerks and mill workers), in a silk manufacturing company. A large percentage of the latter were foreign or illiterate.

The clerical intelligence test proved to be of decided value in the selection of members of the office force and has been adopted for permanent use. The results of an extended tryout of the performance intelligence examination, however, are both startling and baffling and cast an ominous shadow over the future of strictly intelligence tests for manual workers.

The performance scale used in this connection consisted of thirteen tests covering a wide range of mental activity. The examination of an individual lasted on the average of an hour. In all, some 400 employees were tested. These were placed in three groups according to their productive ability ascertained by careful investigation. In the last analysis, it was found that the correlation between intelligence and productive ability was zero! No amount of age grouping or length of service grouping would bring anything but zero out of the correlations.

Commenting on this result, the writer says: "The tests did measure intelligence one may be perfectly confident. The ability of clerks in these tests were found to be distinctly above that of mill workers as a class. The intercorrelations between the several tests ranged between .40 and .75, denoting a 'reliability coefficient' for the the whole scale of .97. When thirteen widely varying tests tend strongly to measure the same ability, that ability must be 'general ability' or intelligence." It cannot be asserted confidently that every examinee did his best on the tests. There was lacking the incentive that is present when an applicant seeks employment.

The conclusion drawn from these researches is that intelligence is not only not required for most operations in a modern mill, but may even be a detriment to steady, efficient routine work. What qualities are required remain to be sought. They may be stolidity, patience, inertia of attention, regularity of habits, etc.

HUMAN ELEMENT IN VALUATION

Electrical World, A. G. A. Abstract

IN a decision ordering the Pacific Gas & Electric Company to pay back to its gas customers more than \$2,000,000 charged by it in excess of the tariff fixed by the City of San Francisco, the Federal District Court made these observations on valuation: "The valuation of a plant of this kind is largely a matter of guess work. Unlike cotton, wheat and other commodities that are bought and sold daily in the market and have an established value, gas plants are seldom sold, and if one should be sold, the selling price offers a poor criterion by which to fix the value of another where the surrounding circumstances may be entirely different. Noted engineers will differ, and differ widely, as to the value of such plants. The difference between the engineers who come before this court so highly recommended by the master and by counsel is measured by millions and not by thousands. A difference of 10 per cent in the appraisement or valuation should be accepted as a matter of course rather than as a matter of surprise. The courts have no monopoly in the privilege of appraising or guessing. They must accord the same rights and the same privileges to the Board of Supervisors, and the mere fact that they may differ from the board in their conclusions does not necessarily establish the charge of confiscating property or denying to the citizen the equal protection of the laws."

KEEN SENSE OF RESPONSIBILITY

QUITE recently a woman in Buffalo concluded that in her estimation it was time for her to pass to "the other side", and that gas would be a quick, sure and comparatively inexpensive method of taking her own life. However, she apparently felt that even this means would entail a certain amount of cost upon the gas company. Therefore, when preparing to take her life by inhaling gas, she wrote a note to the gas company enclosing \$3.50, the amount she estimated would be used in the process of taking her life, and in waste before the leakage of gas would be discovered.

This, we believe, is the first instance, at least it is the first we recall, in which so keen a sense of responsibility for debts incurred has been made manifest, the nearest approach being possibly the return of moneys stolen, years after the theft.

The foregoing indicates the honesty of American citizens, as well as indicating a citizens' estimate of the value of a gas company's product.

The case was a sad one, but the instance was a most unusual one.

Start some kind word on its travels, and do it now.—Selected.

WHAT WRINKLE MEN GOT

SOME men put it in the neck, other men put it in their pocket, while still others put it in their pocket. Of this latter class were men of the Manufacturers Light & Heat Company, of the United Natural Gas Company, of the Ohio Fuel Supply Company, whose checks doubled the amount of prize money given by the Natural Gas Association to the prize winner who supplied the best and most practical "wrinkles" presented at the Natural Gas Association convention, arranged in Cincinnati.

Mr. J. H. Crockett, General Manager of the Ohio Fuel Supply Company, Mr. Raymond Cross, President of the United Natural Gas Company, Mr. H. A. Quay, General Manager of the Manufacturers Light & Heat Company, who were in the prize-winning position, were quick to note the results of the wringing work on the part of their competitors, and turning over real cash, as we have noted, they were clever enough to take the prize money from the association.

As you can hear of the promise being made regarding similar rewards in account of wrinkles presented at the convention in Kansas City next May, these companies have trodden upon very thin ice, and it is a precedent that they themselves established.

They were profitable last year. Will they not be profitable at the top of the gas men this year?

It is a precedent the Wrinkle Editor, the Natural Gas Editor of America, Pittsburgh, Pa.

GASOLINE TAXES

THE question of raising gasoline tax in order to encourage conservation would seem to be a question of common sense thrown up by the large loss of gasoline which we are reforming by using the gasoline tax most judiciously.

It is a question that must be put to the producers and consumers of gasoline, and it is a matter of common sense that must be backed by the automobile, industrial and pleasure industries.

The question of raising the gasoline tax is a question of common sense, and it is a question that must be put to the producers and consumers of gasoline, and it is a matter of common sense that must be backed by the automobile, industrial and pleasure industries.

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that the oil industry is already paying more than its just share of State and National revenues.

It is not the interests of the public that are being fought, but it is the proposed plan as proposed.

AMONG THE CONVENTION EXHIBITORS

Of course there will be many more who will exhibit at the Natural Gas Convention at Kansas City the middle of May than those who have up-to-date information as to whether they will or will not exhibit. However, among those who have indicated that they purpose exhibiting are the following:

The Chapin-Fulton Mfg. Company, Pittsburgh, will show complete line of Fulton regulators.

The J. B. McKim Fishing Tool Co., Parkersburg, West Va., will show oil and gas well fishing tools.

C. M. Fleeter Sons & Co., Inc., Butler, Pa., will show one of packets, corrugated traction sockets, swabs, sand pumps and other drilling supplies.

The Bryant Heater & Mfg. Co., Cleveland, O., Bryant gas boilers and water heaters.

The Sprague Meter Co., Bridgeport, Conn., to show their standard line of meters and the new line of TD type slide valve meter.

The Well Supply Co., Pittsburgh, Pa., pumps and supplies for field operations.

Wm. McCrane Co., New York City, line of Autocat ranges and other appliances.

S. K. Dresser Mfg. Co., Bradford, Pa., will show Dresser couplings, sleeves, clamps and fittings.

The C. & S. Cooper Co., Mount Vernon, O., superchargers and compressors, photographically displays.

Mason Manufacturing Co., Chicago, will have on exhibit their lighting plants and other Mason products.

The Sprague Meter Co., Cleveland, to show full line of A & M type meters.

R. H. Co. & Co., Inc., to show their feature in gas and oil meters.

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The power of punishment is to silence, not to confute —Johnson

RECORD OF A CENTURY

FULLY a century ago, so old records indicate, Cumberland County in east Kentucky was known to contain gas, so some have said; others, that it was known to contain oil, and still others, both oil and gas. Cumberland County has slept these many years so far as its supply of these elements is concerned. It is a district far back from transportation, one of those sections, in a sense hidden from the world, yet where nature-treasure lies buried, possibly in vast quantities.

Not many years ago it would have been impossible to reach Cumberland County's interior district with heavy equipment, as that territory can be reached today. Of course, horses were then available, but today not only horses but certain types of tractors that surmount practically any difficulty, as well as enormously powerful trucks, may be swung into service to convey boilers, engines, drilling equipment, etc., in fact, all of the necessities from not near-by, but nearest-by railway discharging points, or perchance during the season of navigation the prospector will find his way into the borders of this "far away region" by descending the Cumberland river, and then like our ancestors, but with the modern "prairie schooner," the tractor and the truck, blaze the way back into a district as yet largely unknown in the matter of its wealth, even to those who are experienced in the fields of gas and oil.

Since days of long mileage via pipe-lines have come into existence and in view of the caterpillar tractor, and other types of obstruction overcoming mechanism, this far away county is likely now to spring into existence as one of the big producing sections.

Had it not been for the difficulties of transportation, etc., it is likely that Cumberland County would have long since come into her own.

We are informed that sands designated as Trenton Rock, but that locally are known as lower and upper Sunnybrook, would seem to be a source of Cumberland County oil.

Much interest will be felt by men of the industry in developments in this which promises to be an excellent field, when opened up.

REMEMBERS OLD FRIENDS

MR. W. P. CRAIG, one of the former staff of the United Natural Gas Company of Oil City, has for some time past been living in Maryland, having given up the superintendency of gas interests.

We all realize that in the region of Baltimore are to be found some of the best oysters to be had in the waters of the United States, and Mr. Craig, realizing how good first-class salt-sea oysters would taste to men in the interior, sent a barrel of bivalves that were gathered in the Chesapeake, to his former men and associates. These fine oysters were recently served to offi-

cers and men of the United Company at a dinner held in the Y. M. C. A. of Oil City.

At the conclusion of the dinner there were brief addresses, and musical selections by a male quartette composed of men from the company. Thus oysters, and clever addresses, and music supplied all that was necessary to induce a big, hearty, heartfelt vote of thanks to Mr. Craig for the remembrance.

THE CASH BONUS FOR EX-SERVICE MEN

THERE has just been received at our editorial office from the Chamber of Commerce of the United States a setting forth of the result of a referendum vote upon this subject. The result of this ballot showed 72 per cent of the interests forming the National Chamber, voting against the enactment of a law providing such. However, expressions were strong in favor of a form which would not be indiscriminate. In other words, favoring the care of those disabled, etc., such as is now being carried on. Also, assisting others not disabled, but whose needs might require assistance.

It would seem that the desire on the part of the Chamber of Commerce of the United States was not to prevent care of needy ex-soldiers, not an effort backed by a selfish motive, but to arrive at the opinions of a vast number of our very best thinkers as to what course should be followed at the present juncture.

Votes were cast by business organizations in 375 cities, 46 states, in the District of Columbia, Alaska and Hawaii.

In concluding, the communication states:

"Adequate relief for the disabled still remains the first step in the National Chamber's program. A present expenditure of more than \$1,000,000 a day for disabled men is evidence of the desire of the people that those veterans who suffered physical or mental impairment shall be cared for adequately until returned to a life of usefulness and independence. Beyond that point the National Chamber will continue to advocate legislation for the benefit of the healthy uninjured veterans which will include opportunities for vocational training and land settlement aid, constructive measures which are best calculated to make every ex-service man an independent, self-respecting member of his community."

LOUISIANA CONSERVATION

WORD comes to us from New Orleans to the effect that with the approval of Governor Parker of Louisiana, M. L. Alexander, Commissioner of Conservation, has issued announcement that the use of natural gas by carbon black plants in the Monroe field shall be curtailed, and that 20 instead of 25 per cent may henceforth be used for this purpose, the aim being to conserve natural gas for domestic and industrial utilization.

It is not only wise to practice what you preach, but practice about ten times as much.

AROUND THE BELT

New Wells, New Pipe Lines, New Contracts, Additions and Extensions. A Fund of Valuable News Collected for the Journal Through Many Sources

TRADE PERSONALS

Mr. L. M. has resigned from his connection with the Well Supply Company's store at Basin, Wyoming, and is now head of the Leidecker Tool Company's store at Basin.

Mr. W. L. who has been connected with the Oklahoma Gas & Electric Company, Oklahoma City, Okla., for a period of almost fifteen years, lately became Chief Engineer of the power plant of the Oklahoma Gas & Electric Company.

Mr. A. G. who fills the post of Construction Superintendent with the Louisville Gas & Electric Company, Louisville, Ky., has been chosen as President of the Engineers and Architects Club of that city.

Mr. Carnody, M. B., has been appointed associate receiver for the Midcon Petroleum Company, and is located at Tulsa, Okla. Mr. Carnody, some time ago, was Superintendent of the Southwestern Gas & Electric Company's Gas District.

Mr. McNeck, S. L., has been appointed Sales Manager of the Guardian Gas Appliance Company, Cleveland.

Mr. J. C., Manager of the Shafter County Gas Company, Drumright, Okla., for the past year, has sold his interests in that corporation and is now Manager of the State Automobile company in Drumright.

Mr. H. S. who was for some years Secretary of the Southwestern Electrical and Gas Association, Dallas, Texas, is now established as an advisory engineer in electric light and power, electrical railways, gas and water works with others in the same city.

Mr. Eugene, of Calgary, who was elected President of the Volcanic Oil & Gas Company, at the annual meeting of the concern at Niagara Falls, Ontario.

Mr. H. C. is now Manager of the El Dorado branch of the Kansas Gas & Electric Company. Mr. Cox formerly was Superintendent of Transmission Lines.

Mr. Clarence L., formerly in charge of the branch of the Well Supply Company at Coalinga, Cal., is now located at Huntington Beach, Cal., where the company has established an office and warehouse. Mr. Hill is in charge of the new office.

Mr. H. L., of the Union Gas & Electric Company, Cincinnati, Ohio, has been elected to membership in the Cincinnati Chamber of Commerce.

Mr. James recently was appointed to take charge of the Casper, Wyoming, branch of the National Supply Company.

Mr. H. R., of the Parkersburg Rig & Reel Co., Parkersburg, W. Va., has been on an extended trip to

Wyoming in the interests of his company's plants in that state.

Mr. H. F. has resigned from his post as Petroleum Economist of the U. S. Bureau of Mines in order to become connected with the American Republician Corporation, New York City.

Mr. George W. has been elected a director of the Standard Oil Company of New Jersey. Mr. Mayer will have charge of the Department of Domestic Sales.

Mr. Morefield, I. W., who has been Manager of the Okmulgee, Okla., offices of the Empire Pipe Line Company, has recently been placed in charge of the Gas Department of the Denver Gas & Electric Company.

Mr. F. F. of Buffalo, has been elected Vice President of the Volcanic Oil & Gas Company. The annual meeting of the corporation took place at Niagara Falls, Ontario.

Mr. George, has been appointed bookkeeper for the Randall Gas Company, Randall, West Va.

Mr. Schofield, George, recently became Business Manager for the Empire Gas & Pipe Line Company, Topeka, Kan. Mr. Schofield was previously New Business Manager of the Empire Gas & Fuel Company, Bartlesville, Okla.

Mr. M. R. is now Superintendent of the Oklahoma Division of the Empire Gas & Fuel Company of Bartlesville, Okla. Mr. Shafer was formerly at El Dorado, Kan.

Mr. I. M., of Clarion, Pa., having completed a period of thirty-two years of service with the United Natural Gas Company, recently retired taking his place on the company's pension list. On the occasion of his leaving the company Mr. Simmons' co-workers and associates gave a dinner for him at the Venango Club, presenting him with a handsome gift as a remembrance of the long period of their association with him, and as a token of the esteem in which he is held.

Mr. Theodore, of El Dorado, Kan., has been appointed Manager of the Kansas Gas & Electric Company's Wichita branch.

Mr. C. B. formerly Superintendent of the Gas and Electric Department of the Kansas Gas & Electric Company at Wichita, Kan., is now Manager of the company's Arkansas City district.

ELECTED

Mr. H. C. was elected to the recent meeting of the National Association of Petroleum Engineers, the following officers were elected: President, Mr. H. C. of the National Gas Supply Co., Dallas, Tex.; Vice President, Mr. H. C. of the National Gas Supply Co., Dallas, Tex.; Secretary, Mr. H. C. of the National Gas Supply Co., Dallas, Tex.; Treasurer, Mr. H. C. of the National Gas Supply Co., Dallas, Tex.

Prudence, like experience, must be paid for.—Sheridan.

ner, president of the First State Bank, Detroit; C. S. Avery, president of Drake Avery Company; J. B. Webbe, Simmons Hardware Company, St. Louis; W. H. Beamer, St. Louis; Judge Jones, St. Louis.

ONTARIO—*Niagara Falls*—At the annual meeting of the Volcanic Oil & Gas Company, officers and directors were elected as follows: President, Eugene Coste, Calgary; vice-president, F. E. Ogden, Buffalo; directors, D. A. Coste, Niagara Falls; C. E. Calvert, Toronto; J. G. Kerr, Chatham.

PER CUBIC FOOT—RATES

ARKANSAS—*Fort Smith*—The Twin City Pipe Line Company is asking permission to charge a higher rate for gas supplied for industrial purposes. The present rates range from 10 to 15 cents per thousand, while the company's petition provides for a flat rate of 15 cents per thousand.

KENTUCKY—*Louisa*—The United Fuel & Gas Company has reduced its rate 0 per cent. in this place as well as in Catlettsburg. The new rate is 32 cents less a discount of 2 per cent.

LOUISIANA—*Shreveport*—The Southwestern Gas & Electric Company has been denied permission by the Public Service Commission to increase its domestic gas rate. The rate at present is 25 cents per thousand. The matter of increase of industrial rate is not as yet settled, and it is reported that there is a possibility that the company may be authorized to increase its rate in this branch of its service.

OHIO—*Lima*—The Lima Natural Gas Company has made effective a new rate schedule as follows: \$1.00 per thousand for the first 5,000 cubic feet; \$1.05 per thousand for the next 5,000; \$1.10 per thousand for the next 5,000 cubic feet, and \$1.25 per thousand for all over 15,000 cubic feet. A minimum service charge of \$1.25 per month has been established. No discount is allowed. The period set for the schedule is three years.

OKLAHOMA—*Oilton*—The Oilton Gas Company has increased its rates 13 cents per thousand for domestic purposes.

Quapaw—Effective April 1st, the Quapaw Gas Company has adopted the following rates: 35 cents per thousand for domestic purposes; 20 cents per thousand for industrial purposes; 20 cents per thousand for all users of over 500,000 cubic feet per month. This is an increase over the former rates.

PENNSYLVANIA—*Allegheny County*—Permission has been granted the Pennova Natural Gas Company to increase its rates from 50 cents per thousand up to 100,000 and 45 cents per thousand for consumption over that volume, to a flat rate of 53 cents gross per thousand or 50 cents net. A minimum rate of \$1.00 per month has been established.

Monaca—An increase in rate from 45 cents to 50 cents per thousand has been announced by the Crescent Gas & Oil Company. The company supplies Colona, Monaca Heights, Wireton, Glenwillard, Sheffield, and South Heights as well as Monaca.

GENERAL

CALIFORNIA—*Huntington Beach*—A branch office and warehouse has been established here by the Oil Well Supply Company of Pittsburgh. Clarence J. Hill formerly of the company's branch at Coalinga, Cal., will be in charge of the new office.

Santa Fe Springs—The Union Oil Company had two gas blowouts in drilling in their No. 1 well on the Alexander property and also in No. 2 well on the Bell ranch. The same difficulty was experienced in the drilling of No. 3 on the Bell ranch.

COLORADO—*White River*—The Rio Blanco Carbon Company, organized recently by Denver interests, is erecting a plant at this point for the manufacture of carbon black. The gas for this purpose will be purchased from the White River Oil Company operating in this district. The officers and directors of the Rio Blanco Carbon Company are: President, Thomas J. Dixon; vice-president, S. R. Robertson; secretary and treasurer, F. M. McMahon; directors, Hon. James F. Garrigues, Hon. Walter Dixon, C. F. Schulte, Fred J. Green.

GEORGIA—*Fort Gaines*—Local engineers are interesting themselves in locating oil and gas on territory along the Chattahoochee River, where it is claimed indications of both products have been found.

INDIANA—*East Chicago*—The Indiana Natural Gas & Oil Company has placed a contract for a 10,000,000-cubic foot gas holder with the Koppers Company. The Riter Conley Company will furnish the holder parts.

KANSAS—*Coffeyville*—The Coffeyville Gas & Fuel Company has completed plans for overhauling its distribution system, making replacements, repairs and additions as required. The sum of \$50,000 has been appropriated for the work as laid out.

El Dorado—The Empire Gas & Fuel Company is offering for sale its water system. The price at which the system is in the market is \$250,000.

Lawrence—Following a rate controversy in which the Citizens' Light, Heat & Power Company was enjoined from charging above 80 cents per thousand for gas, an action has been filed in the United States District Court by the State, asking that a receiver be appointed for the company. The 80-cent rate was fixed by the industrial court in 1920, and later by the Utilities Commission. The company also established a service charge of 50 cents per month, and it is the service charge which is now being attacked.

Public opinion is democratic.—Holland.

KENTUCKY—Barren County. Howard Harlin has completed a good gasser within the town limits of Olney.

It is reported that thus far sixteen wells have been drilled in the town and gas is plentiful for all purposes.

Lawrence Green. The M. M. Ennis lease situated near here was recently purchased by the Chippewa Oil & Gas Company. Since the acreage changed hands a 50 barrel well has been completed in a location made out of the new contract.

LOUISIANA—Monroe. A recent survey of the Monongas gas field, which comprises Ouachita, Lincoln, Richland, Caldwell, Jackson, Union, Morehouse and Franklin parishes shows 154 wells drilled, with 84 of them producing. The producing wells are located in Ouachita, Morehouse and Union parishes. The survey shows that of the 76 wells drilled in Ouachita Parish 47 are producing while 29 wells turned out dry holes. In Lincoln parish all wells drilled were all dry holes, the same is the case with the wells drilled in Richland parish, five wells drilled in Caldwell parish, eight wells drilled in Jackson parish and one well drilled in Franklin parish. In Union parish out of 15 wells drilled seven are producers and eight are dry holes. In Morehouse parish out of 37 wells drilled 30 are producing and seven are dry holes.

MICHIGAN—Manitowish. According to report a tract of land near this city is to be tested for oil and gas during the coming spring and summer. E. C. Weaver of Detroit has been awarded the contract for drilling ten wells. It is said that a number of years ago oil was found in this neighborhood.

MISSOURI—Kansas City. April 4th to 7th are the dates set aside for a petroleum exposition to be held in this city. E. C. Winters, Chairman, is in charge of arrangements.

MONTANA—Forsyth. The Steller Oil & Gas Company is reported to drill eleven wells in the Fortuna gas field district.

NEW JERSEY—Plastic City. The American Society for Testing Materials will hold its annual meeting here Sept. 1 to July 1st in this city. The Chalet Hotel will be headquarters.

NEW MEXICO—Tuba. The Arco Oil & Gas Company has completed its second well in this territory and now is yielding around 8,000,000 cubic feet.

NEW YORK—Buffalo. The natural gas supplied to the residents by the Troquois Natural Gas Company during the winter period been mixed with manufactured gas and the company has by this means been able to greatly improve its service. The mixed gas has given excellent satisfaction.

OKLAHOMA—Bartlesville. The Smelter Gas Company is completing its gas line to the Osage field, where the gas operations has been taken over by the company from the Indian Territory Illuminating Oil Company.

Osage County. The Humble Oil & Refining Com-

pany has completed a large gasser in their No. 3 well on the Foster lease, section 15-2-14.

Chandler. The Oklahoma Natural Gas Company has lately completed a number of important main extensions in this city.

Dreamlight. The local division employees of the Oklahoma Gas & Electric Company have formed an organization which will be called the O. G. and E. 100 Per Cent Club, the purpose being entirely social. Employees to become members of the club must be owners of company stock and users of the company's service. Officers elected at the organization meeting are: President, John Larkins; vice president, George Legg; secretary, J. J. Miles; treasurer, Grace Schmitz.

Elmore City. The Lone Star Gas Company is constructing a 20 inch pipe line from the Fox field to this city.

Gardner, Kan. The Wrightsman Oil Company in No. 1 on the Northey lease, section 14-14-34 reports a good flow of gas at a depth of 1,331. The Magnolia Petroleum Corporation has a good gas producer in No. 4 Cowan, section 15-14-24.

McIntosh County. The Ozark Drilling Company in No. 1 on the Smith tract has completed a good gasser at a depth of 2,162 feet. The location is in section 21-12-14.

Odessa. Charles E. Petty, owner of the local ice and electric plants here, has purchased the properties of the Odessa Gas Company.

Okfuskee County. The Francis Petroleum is reported to have brought in a gasser of large producing capacity in its No. 1 on the Hill tract, section 11-10-11, at a depth of 2,583-2,590 feet.

Osage County. In No. 3, section 4-23-9, Peters, Markham and associates have shut in 5,000,000 cubic feet of gas at 2,052-2,155 feet.

Perry. The Cities Gas Company has been formed here with the purpose of supplying residences with gas for heating and lighting. The company has made a location in section 28-21-21-14 on the Gooden farm, southwest of the city, and is drilling a test well. The company expects to develop production in the territory adjoining to the city.

Stephens County. The Magnolia Petroleum Company in No. 2 on the Smith lease, section 14-14-34, has reported to be a large gas producer at 1,400-1,672 feet.

Wichita County. The Texas Oil & Minerals has a good gasser near the main field in No. 2 on the Townslet property, section 2-15-24.

Rockwell & Davis. No. 2 on the Townslet lease, section 15-14-34, reports a gasser with an estimated capacity of 12,000,000 cubic feet at a depth of 2,174 feet.

The Magnolia Petroleum Co. No. 1 on the Townslet lease, section 15-14-34, has reported to be a large gas producer at 1,400-1,672 feet.

Wichita County. The Texas Oil & Minerals has a good gasser in No. 1 on the Townslet lease,

Will and blind prejudice are the best defence of actual power and exclusive advantages —Harritt

section 3-17-16. No. 2 well drilled by the same interests on the same lease is also a good gasser at around 600 feet.

Wann—The properties of the Quapaw Gas Company in this city and in Copan, including pipe lines, have been purchased by W. L. Cushenbury and G. F. Boswell.

PENNSYLVANIA—*Clarion County*—A large gas well has been completed in the Pine Hollow field, located in this county. It is claimed that the well is good for 12,000,000 cubic feet per day.

Greene County—In Bristol district, the People's Natural Gas Company has completed a gasser on the J. L. Garrison farm.

In Gilmore township, the People's Natural Gas Company's test on the S. W. Gilmore farm is a gasser. In Morris township, the Wheeling Producing Sompany's No. 3 on the D. K. Phillips farm is a small gasser in the Big Injun sand.

The Manufacturers Light & Heat Company has a fifth sand gasser at a test on the H. C. Rizer farm, in Aleppo township. In Jackson township, the same company has a gasser in the Big Injun sand at a test on the Edward Huffman farm.

TENNESSEE—*Robinson County*—The Sewanee Oil & Gas Company in No. 1, in District 4, has a gasser at a depth of 685 feet.

TEXAS—*Bayou*—No. 1 well of the Gulf Company on the Luce property, to the east of the city, came in at a depth of 2,840 feet with a strong pressure of gas that wrecked the derrick.

Comanche—A contract between the Comanche Gas Company and W. R. Caldwell under which the company is to receive a certain supply of gas from wells drilled by Mr. Caldwell in this territory, has been approved by the authorities. The gas supplied by Mr. Caldwell is distributed in this city by the Comanche Company.

Millsap—Jackson & Cathart are reported to have completed a good gasser near Millsap at a depth of 690 feet.

Panhandle—It is reported that the Gulf Production Company has brought in a very large gasser in a well located near this place.

San Antonio—The Southwestern Electrical and Gas Association will hold its annual meeting in this city May 3d to 6th, inclusive.

WEST VIRGINIA—*Boone County*—On Coal River, Petonia district, the Owens Bottle & Machine Company has a good gasser in its test on the Broun heirs farm. The gas was found in the Berea grit.

Braxton County—In Salt Lick district the Cumberland Oil & Gas Company has a gasser in the stray sand at its No. 7 on the Guy Edwards' farm.

Cabell County—On the waters of Fudges Creek, in Grant district, the Empire Petroleum Company have

completed the No. 1 well, Elijah Chapman farm, through the Berea sand, and have a 250,000 foot gasser.

Calhoun County—In Sherman district the Hope Natural Gas Company has drilled its test on the W. T. Wiant farm. It is a fair gasser.

In Center District, James W. Yoke in No. 1 on the Bickel Bros. land completed a 1,000,000-cubic foot gas well at a depth of 1,900 feet.

In Center District, the Chemical Oil Company has a salt sand gasser at No. 19 on the Bennett heirs' farm.

Charleston—The Vickers Oil & Gas Company has been granted permission to increase its capital from \$50,000 to \$75,000.

Doddridge County—In New Milton district, Trainer & Travis have a Big Injun sand gasser at No. 3 on the Lewis Maxwell farm.

In the Central district, located on Cabin Creek, the McCall Oil Company's test on the Mary A. Bee heirs' farm is a gasser in the Big Injun sand.

In Southwest district, E. S. Daubenspeck & Co. have completed a Big Injun sand gasser at a test on the W. R. Brown farm.

Gilmer County—In Center district, the Smokeless-Peerless Carbon Company has a salt sand gasser at a test on the Nora V. Roberts farm.

On Bear Fork of Cove Creek, Troy district, the Hope Natural Gas Company developed a fair gas pressure in the Big Injun sand at a test on the W. W. Elmer farm.

Harrison County—The Grasselli Chemical Company's second test on the E. M. Copring farm, located in Simpson district, is a gasser in the fifth sand.

Lincoln County—In Carroll district, the Huntington Development & Gas Company encountered a fair gas pressure in the Big Lime formation at a test on the Walter Porter farm.

Marshall County—In Liberty district, the Manufacturers Light & Heat Company has a small gasser in the Gordon sand at a test on the M. B. Shenfield farm.

Pleasants County—On Crooked Run, McKim district, Bringheimer & Company have completed their test on the Campbell estate. It is a gasser with a capacity of 1,000,000 cubic feet a day.

Putnam County—In Curry district, the Sovereign Gas Company has completed a test on the Henry E. Lawson farm. It is a gasser in the Berea grit.

Ritchie County—In Murphy district, the same company has a salt sand gasser at a test on the John W. Barton farm. In the same district, the same company's test on the W. V. Gill farm is a gasser in the Maxon sand.

In Union district, the Hope Natural Gas Company got gas in the same formation at a test on the Elizabeth Ferrell farm.

On Bone Creek, Union district, the Hope Natural Gas Company's test on the Amos Huff farm is a light gasser

Even the burglar isn't satisfied to take things as they come. He goes after them.

in the Big Injun sand. On the same stream and in the same district, the Philadelphia Oil Company has a Big Injun sand gasser at No. 3 on the Smith Good farm.

The Hope Natural Gas Company on the C. A. Ward farm, Bove Creek, Union district, has a 7,000,000-foot gasser in the Big Injun sand.

In Union district, the Pittsburgh and West Virginia Gas Company has a light gasser in the same formation at a test on the Alonzo D. Good farm.

Ross County—In Smithfield district, Godfrey J. Cabot has a gasser in the Big Injun sand at a test on the C. C. Simmons farm.

Tyler County—In McElroy district, Baker & Eagon have a light gasser in the Gordon stray sand at a test on the David Tustin farm.

WYOMING—*Toole County*—The Troy-Sweetgrass Syndicate, section 21-34-1, on the Sweetgrass arch, has developed 2,000,000 cubic feet of gas at 1,377 feet. The well is being drilled deeper.

Yellowstone County—The Clarks Fork Oil Company, in its well in section 2-2-26, on Bitter Creek, developed 100,000 cubic feet of gas at 470 feet. At this depth the well was shut down.

ALBERTA—*Falyn*—The Imperial Oil, Ltd., is drilling in the Irma district, near this city.

Gratton Coal—The Gratton Oil Company has completed a good gasser in this territory.

ONTARIO—*Kent County*—In No. 15 and No. 16 completed by the Union Natural Gas Company recently good gas production was developed.

The Percol Oil & Gas Company has completed a good gas well in No. 3 on the Gabnell property.

Peel County—In Caledonia township, the Dover Oil Company has completed its No. 1 well on top of the Trenton limestone and reports a good gas production.

MID-CONTINENT YEAR-BOOK

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HE Mid-Continent Oil & Gas Association has issued in book form its fourth annual report, it also containing the second annual report of the Osage Oil and Gas Lessees Association.



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It is a very complete year-book, and should indicate to those in that field the desirability of a membership in the organization. The book is printed on a heavy non-finish paper, with the exception of the advertising pages which are printed on coated paper. The volume contains a large measure of exceedingly valuable data, and would prove an excellent and desirable addition to every gas and oil library.

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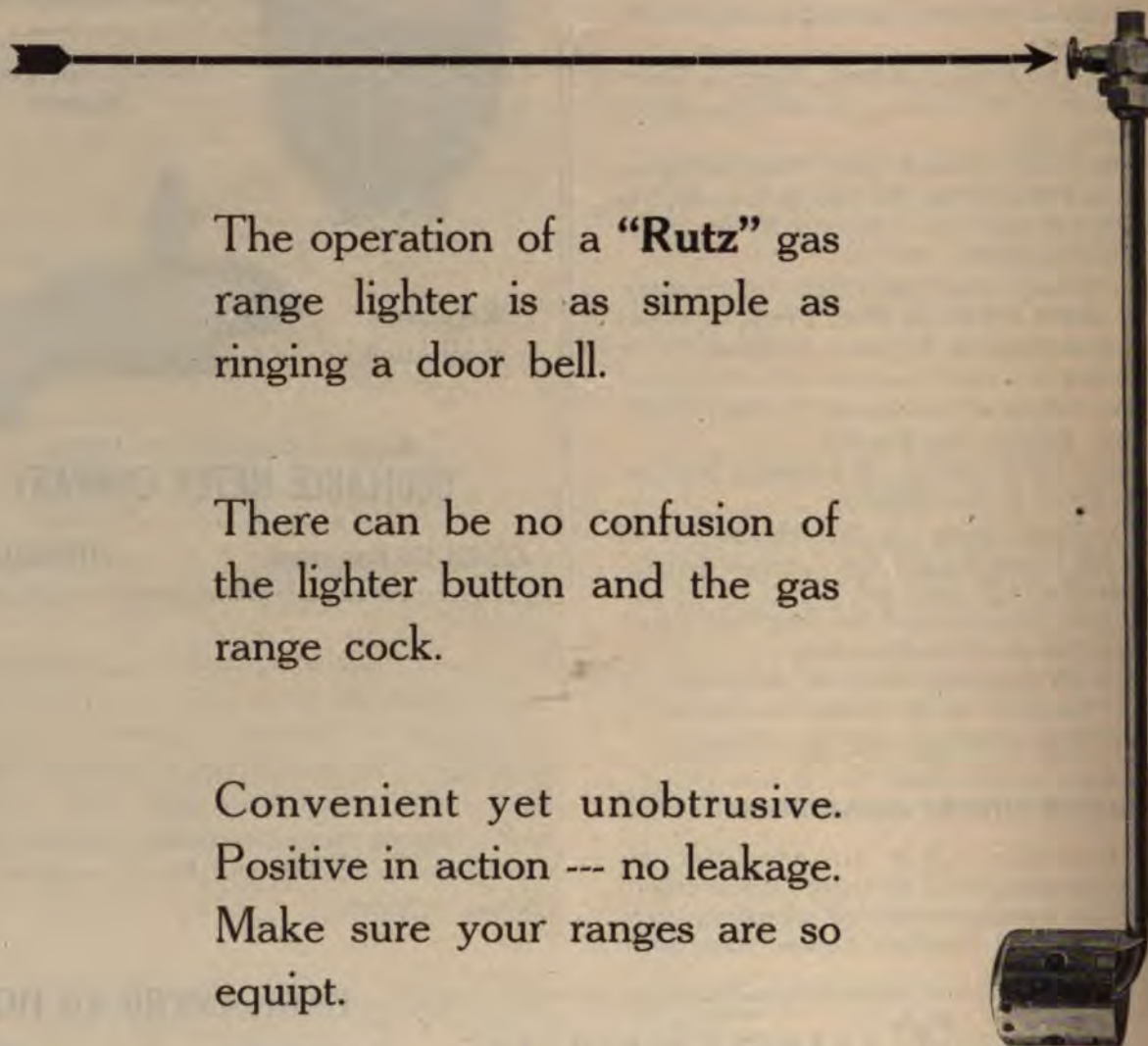
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V. 16 no. 4

APRIL 1922

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Air, Oil, Gasoline, Hydro-
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and Other Fluids.



Gas Meter Provers, Wa-
ter Meter Provers.

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Meter**—For domestic and small
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vices, using either Natural or
Artificial gas.



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low pressure commercial or
industrial services using Natural
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**Westinghouse Proportional Gas
Meter**—For large volumes of
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BOLTON IRON STOP COCKS



The feature of the Bolton Iron Stop Cock is a brass nut as shown in Fig. 2 which is threaded with a right hand thread to fit the end of the plug, Fig. 3, and is also threaded with a left hand thread to fit a corresponding thread on the body of the cock, Fig. 4.

As the brass nut is turned, the plug is forced out of or down into the seat of the body, depending upon the direction in which the nut is turned. This enables the operator to open or close the cock without damaging it and with absolute safety to himself as all danger of the plug flying out of the cock when used on high pressure lines is eliminated. The brass nut will lock the plug securely when plug has been set in the desired position, either open or closed.

With any of the regular stop cocks now in use, it is frequently necessary to use a hammer to loosen the plug, a method not only dangerous but also expensive as the plug is often broken. This is especially true where the cocks have not been operated for a considerable time. It is never necessary to hammer the Bolton Cock.

For Safety, Continuous Service and the Elimination of Replacements we recommend the Bolton Stop Cock.

Send for Bulletin No. 30, or inquire at any of our Branch Stores.



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World's Largest Manufacturers of Oil Well Equipment

Building Prospects

IN view of the fact that the building of houses means in the vast majority of cases a need for gas ranges, for water heaters and other domestic gas appliances, and since the building of many industrial plants means much industrial gas equipment, it is quite in keeping that we should recount the findings of the National Bank of Commerce of New York. In a report from this institution received at our editorial department, the following statement is made:

The present activity in building operations is an outstanding feature of the general business situation. The building industry in the United States is second in importance only to agriculture and many million workmen directly and indirectly are dependent upon it. In the more active building sections of the country that are systematically reported, comprising about half the states, considerably more than two billion dollars in contracts were awarded last year.

In the first ten weeks of 1922 the value of contracts let for building and construction, including public works, in the

twenty-five states north of the Ohio river and east of the Missouri, as reported by the F. W. Dodge Company, was \$427,267,000 compared with \$280,841,000 for the corresponding period of 1921. March is regarded as the crucial month by which the building outlook is to be judged. Contracts for the two weeks from February 24 to March 10 for the indicated territory were \$118,121,000 compared with \$66,264,000 in 1921. Bradstreet's report on building permits shows a total of \$263,303,000 for January and February, compared with \$133,516,000 for these months in 1921."

The foregoing figures show decided activity and have great significance in view of the fact that building costs are as yet out of all proportion to costs in other lines. With the conditions as they exist fully in mind, we see great encouragement.

In fact, on every hand, throughout a lengthy recent trip, the writer met with not the doleful face and the complaining individual, but hosts of not simply hopeful but bright and cheerful individuals, made such by the betterment of conditions already within their reach.

The statement is made that plenty of capital is in sight for 1922 in the Natural Gas and Oil Fields, thus ensuring ample development, as likewise there is quite sufficient money available to manufactured gas companies to make possible large improvements and the extension of lines.

Manufacturers of equipment, appliances and supplies for the utilization of gas show great activity, and we are told by equipment manufacturers that there is plenty of business, but what they need most of all at present is a stabilized market.

Advertisers are feeling the uplift and are taking larger and additional space in order to again constantly keep themselves in print before the eyes of the prospective buyer.

It is certainly a pleasure to rehearse to our readers the present findings on the part of large and dependable institutions, and we do so with the expectation that even with the coal strikes and other disturbances, we shall not be set back to any appreciable extent, instead, we are on the move, and we shall keep pushing forward full of the vigor that comes with the new awakening of better conditions.

Lucius S. Bigelow

THE NATURAL GAS INDUSTRY

TRANSPORTATION GASOLINE PRODUCTION DISTRIBUTION

DESCRIPTION—
IN THE U.S.

CONTENTS FOR APRIL, 1922

VOLUME 16
THIS NUMBER 4

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Stokes Deep Well Co., Shreveport, La.
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Superior Oil & Refining Co., Columbus.
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United Seal Co., Columbus.
Upson-Walton Co., Cleveland, O.
U. S. Rubber Co., New York.

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Worthington Pump & Mach. Corp., Buffalo.

York Derrick Co., Washington, Pa.
Youngtown Sheet & Tube Co., Youngtown, O.

ANNUAL CONVENTION NATURAL GAS ASSOCIATION OF AMERICA
and EXHIBITION OF SUPPLY MEN'S ASSOCIATION
Kansas City, Kan., May 15 - 17, 1922

Order is man's greatest need, and his true well-being —Amuel.

Natural Gas Convention

Plans for Great Kansas City Event Being Rapidly Completed.

Large Attendance Assured

VIETNAM at Kansas City are progressing excellently well. The manufacturing concerns of the field are responding favorably to the invitations sent out from the association headquarters at Pittsburgh thus ensuring an exhibition of both old and new. In our former number we told of the fact that the main exhibition room is oval in form, has mentioned the west and east arcades where will be the seats of the main auditorium an excellent arrangement in which to display various of the exhibits that will be shown.

There will be four main aisles passing through the Auditorium with a cross aisle at the north and south ends of the rows of exhibition spaces scheduled in main section.

central row of spaces down the middle of the auditorium are twenty three in number. These are ten by ten feet, while those in the two rows to the right and left of this centre panel form a total of twenty-two, which are ten by twenty feet in area. There are also thirty ten by fifteen feet, others nine feet square, others ten by ten feet deep, others ten and a half by ten feet, etc., etc., while there are four large booths, each five hundred eighty square feet, and two smaller forty-four square feet each. The rules governing exhibits are in general much like those in use at former Natural Gas Conventions.

When being a member of the association of Natural Gas Supply Men is entitled to one badge, all extra cost three dollars each. These badges will permit free noon day lunches that are served by the rest of the associations of Natural Gas Supply Men having badges.

exhibits in the center portion of the Exhibition Hall is allowed over a height of six feet, and it is stated that the width of each booth must not be arranged in a way to detract from the abutting booth. Wall spaces reserved for those who desire backgrounds and who light exhibits.

of the subject of patents, as we noted in our former report, has been well thought out by the President. Mr. Justice in Pittsburgh and arrangements are under way that will make for a very instructive and interesting day.

...west is planning to show the east that it knows
...eastern interests tip their hat
...west and the eastern interests are not going to
...the east to be more generous than the east. That

is to say, the east and the west are going to harmonize in so excellent a fashion as to have no marked line noticeable between the two. There shall be no factions," says President Denning.

One of the very important factors in connection with the annual work of the association is the gathering of "Wrinkles" — the valuable means of transmitting from one to another discovered short cuts, easier and better ways of doing things.

The men of the industry have been liberal in the providing of Wrinkles at former convention seasons and it is to be hoped, indeed it is expected, that the harvest of Wrinkles in 1922 will be larger than in any of the preceding years.

Hotel reservations should be made without delay since the attendance will be large, and it is difficult for hotel management to make provision for special occasions, and yet take care of regular hotel customers, unless needs are expressed much in advance of the time of meeting.

The National Gas Industry Magazine feels that same keen interest in the success of this western meeting that might be expected of a publication the owners and publishers of which have attended every meeting of the association since its very beginning the meetings in both the west and the east.

For years no magazine other than the National Live Inventory Magazine upheld the hands of the association, told its story in advance of its meetings, urged large attendance, told of the exhibits that would be shown and afterward gave the industry a clear, concise and excellent idea of the convention and what transpired.

It should not be overlooked that in the delivery of the Northwest Insurance Magazine, we do much credit for its share in the upbuilding of the organization and the success of its work. For as we have said, this magazine, and the state associations, put together, stand as monuments to what is the National Life Association of America.

Attended the 1st meeting of the F.I.C. on 11th May 1952. On 12th and 13th the D.O. arranged meetings with the members of the Faculty to discuss the proposed constitution of the Faculty and the proposed syllabus for the first year.

1. The first group of people who are likely to be affected by the proposed project are the local residents who live in the vicinity of the project. The project is located in a residential area, and the proposed activities may cause noise, dust, and other disturbances that could affect the quality of life of the residents. The project proponent should take measures to minimize these impacts, such as implementing noise control measures and dust suppression techniques.

History of the Church

Document ID: 10000000000000000000

11. What is the purpose of the study?

Nothing is more unjust or capricious than public opinion.—Haskitt.

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 Bridgeport Machine Co., Augusta, Kansas.
 The Bristol Company, Waterbury, Conn.
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 Chaplin-Fulton Mfg. Co., Pittsburgh, Pa.
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 C. and G. Cooper Co., Mt. Vernon, Ohio.
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 The Becker Company, Newark, Ohio.
 Henry L. Doherty Co., New York.
 S. R. Dresser Mfg. Co., Bradford, Pa.
 Equitable Meter Co., Pittsburgh.
 Estate Stove Company, Hamilton, Ohio.
 The Foxboro Company, Foxboro, Mass.
 Frick & Lindsay Co., Pittsburgh.
 General Gas Light Co., Kalamazoo, Mich.
 Gilfillan Machine Co., Ebenezer, N. Y.
 C. M. Heeter Sons & Co., Inc., Butler, Pa.
 Hewitt Rubber Company, Pittsburgh.
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 Imperial Belting Co., Chicago.
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 Jones & Laughlin Steel Co., Pittsburgh.
 Kansas City Gas Co., Kansas City.
 Koppers Company, Pittsburgh.
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 Lee C. Moore & Co., Inc., Pittsburgh.
 H. Mueller Mfg. Co., Decatur, Ill.
 National Supply Company, Toledo.
 National Tube Co., Pittsburgh.
 Oil Well Supply Company, Pittsburgh.
 Parkersburg Rig & Reel Co., Parkersburg.
 Pittsburgh Meter Co., East Pittsburgh.
 Plymouth Cordage Co., North Plymouth, Mass.
 Republic Iron & Steel Co., Youngstown, Ohio.
 Reznor Mfg. Company, Mercer, Pa.
 Robinson Packer Co., Tulsa, Okla.
 George D. Roper Corp., Rockford, Ill.
 Ruud Mfg. Co., Pittsburgh.
 Sprague Meter Co., Bridgeport, Conn.
 Superior Tube Co., Kansas City, Mo.
 United States Rubber Co., Pittsburgh.
 Welsbach Company, Gloucester City, N. J.
 Wico Electric Company, Springfield, Mass.
 Scott Gas Appliance Co., Baltimore.
 Westinghouse Elec. & Mfg. Co., East Pittsburgh.

MEASURING OF ADVERTISING VALUE.

WE frequently hear the words "repeat orders." We know that manufacturers look upon customers who are of the "repeat order" class as a real asset, versus the more expensive type of customer who is brought to the point of buying, but who does not buy again.

When a manufacturer advertises, he, in many cases, attempts to measure the value of his publicity by the number of orders he can trace directly to a certain advertisement, "keyed" or not "keyed," forgetting that even the personal element that makes a salesman's services valuable to the tune of high salary, fails in many, many instances to bring results that are tangible, until he has called again, and again and yet again upon his prospect.

When a manufacturer measures the value of his advertising and the value of his representatives visiting of the trade, there must be an entirely different standard adopted, if real value is to be determined. It must be, "results in the long run."

We have known many a salesman who has made his best permanent customers out of prospects whom he purposely did not at first or upon a second, or upon still additional calls even seek to secure "on the dotted line."

The salesman who is keen and observing knows that often the abruptly made customer is not the customer of long standing, and so is it with customers made through advertising. It is a building process, a gradual weaving into the mesh of the prospects' needs, the feeling that he would miss it if the salesman's call were discontinued or the advertisement ceased to appear.

When an impression is so strongly seated with a prospect, that he would really miss the call or the advertisement, the relationship between representative and prospect, and between advertisement and prospect has become so close that without feeling the jar that comes with undue anxiety and undue urging, the prospect becomes a permanent customer.

We would not wish to be misunderstood as indicating that the signature on the dotted line at the time of an early call, and the immediate response to an advertisement are necessarily not of advantage, but they are best assets, most permanent assets, that come voluntarily and not through the force of true argument. *"Keeping everlastingly at it brings success."*

∴ HOTELS ∴
Baltimore - Muehlebach
 12th Street and Baltimore Avenue
 Kansas City, Mo.
 1000 ROOMS

A bad man's credit is as shifty as himself.—Pliny.

Life of Gas Meter Service

*The Subject of Old Age Meter Changes is Ably Discussed With
Accompanying Tabular Records*

By C. B. MILLER

Superintendent Utilization, Portland Gas & Coke Co.
Portland, Ore.

It will be my point to show that, so far as the experience of the Portland Gas & Coke Company indicates, there appears to be no necessary relationship between the accuracy of a gas meter period in service.

Question of accurate registration in connection with regulations has heretofore been closely associated with the length of time that the gas meter has been in service.

When certain rules have been established, designed to remove meters from service after a certain period of time, the general practice differs in the various localities. Apparently it is based on general experience rather than on a scientific analysis of the conditions.

From the general tendency of gas meters is to run down, the consumer would generally speaking, appear to be at an advantage except in isolated instances. Under such conditions, therefore, from a consumer's standpoint, there appears to be no necessity for regulations governing the period of service and automatically retiring meters for repairs.

On the other hand, the problem of old age meter changes from the gas company's standpoint, not only involves a loss in revenue through slow or D. R. meters, but also represents the largest single item of expense in connection with meter traffic from an operating cost standpoint.

Regulations governing meter changes for old age vary somewhat with different states in the Union in accordance with the following tabulation. It will be observed that the majority of States provide for a meter test every five years.

Service Allowed	STATE	Service Allowed
7 Years	North Carolina	5
5	North Dakota	5
5	Oregon	5
5	Pennsylvania	5
5	Washington	5
5	West Virginia	5
5	Wisconsin	4
5	Arizona	5
5	Nevada	5
5	New York	5
5	Second District, Nevada	5
5	New Hampshire	5 Years

It is the writer's contention that none of the above regulations are based upon a scientific consideration of the subject and that the period after which meters should be changed depends entirely upon local circumstances which should be examined into in the case of each utility.

In view of the large annual expense in connection with the retirement of old age gas meters, there would appear to be, in an arbitrary regulation of the period a great liability to unnecessarily expend a large sum of money in operation, without particular benefit either to the consumer or the company.

We will attempt in this paper to analyze the problem with respect to meter conditions of the Portland Gas & Coke Company, not with the idea that the conclusions will necessarily apply to all utilities so far as the exact period at which meters should be changed is concerned, but rather by way of illustrating that there does not exist any necessary relationship between the period of service and the correct registration of a meter.

For the purpose of determining how long a meter could remain in service without the need of mechanical adjustment or repairs or undue loss from a registration standpoint, records of the Portland Gas & Coke Company were examined on all meters removed from consumers' premises during the 22 consecutive months immediately preceding December, 1916, as shown in the following tabulation.

TABLE NO. 1

Average per cent fast or slow Meters, January, 1915 to November, 1916, Showing Required Meters for 22 Consecutive Months and Different Ages.

Years	0	1	2	3	4	5	6
See Note*	85	22	65	12	10	141	125

Years	7	8	9	10	11	12	13	14	15	16
See Note*	125	235	125	25	256	142	401	142	401	142

*Note: In the cases of 106 meters of all ages were tabulated, but in order to avoid confusion comparison between various makes of meters, but only type consisting of 1,000 meters or 10,000 of the total were being considered. The same rule applies in regard to the figures appearing in this article.

In order to check the first tabulation a similar analysis was made for 1917 and 1918 covering the removal from service of 17,284 Marshall meters which had been

The future is purchased by the present.—Johnson.

in service for periods ranging from a part of one year to as long as 13 years. This tabulation is given below:

TABLE NO. 2

AN ANALYSIS OF MONTHLY METER TEST RESORTS FOR
1919-1920.

Per Cent Fast or Slow for Different Years of Service.

Meter Years	0	1	2	3	4	5
Number of Meters	3111:	3507:	2260:	2178:	1484:	1172:
Per Cent Fast or Slow	— .70	— .39	— .04	+ .07	— .13	— 1.25
Meter Years	6	7	8	9	10	11
Number of Meters	846:	729:	1670:	443:	267:	27:
Per Cent Fast or Slow	— .34	— .35	— .89	— 1.35	— 4.20	— 1.00
Meter Years	12	13	Wtd. Ave. Tot. No. % of			
Number of Meters	6:	2:	% Slow Meters Total			
Per Cent Fast or Slow	— .29	— 1.30	— .54			

Remarks: Figures 6-13 inclusive indicate the number of years the meters represented had been in service.

A notation of (—) minus, means slow; of (+) the % fast.

All figures are on a basis of 1%; for example—11.50, means eleven and one-half % slow.

All meters herein considered have been tested at six times their rated light capacity, and computations based upon such test results with the exception of those proving slow in excess of 50% which were considered D. R., or 100% slow.

It will be noticed that both tabulations reveal about the same situation.

An examination of the tabulations shown does not reveal any progressive relationship indicating that the meters become more or less accurate the longer they have been in service. In neither tabulation is the year of maximum inaccuracy the same.

On the other hand, if we exclude the D. R. meters, the comparison becomes still more striking, and it is evident that the greater inaccuracy, if any, on account of the terms of service, is greatly influenced by the number of D. R. meters which are excluded in the following tabulation:

TABLE NO. 3

ANALYSIS OF MONTHLY METER TEST RECORDS FOR 1919 AND
1920, EXCLUDING ALL D. R. METERS.

Per Cent Fast or Slow for Different Years of Service.

Years Service	0	1	2	3	4	5	6
Total Number Meters	3111	3507	2260	2178	1484	1172	848
% + or —.							
No. D. R.	32	30	15	9	9	16	18
Excl. D. R.	+ .36	+ .56	+ .62	+ .48	+ .48	+ .13	+ 1.28
Years Service	7	8	9	10	11	12	13
Total Number Meters	729	1570	443	267	27	6	2
Incl. D. R.	— .33	— .89	— 1.35	— 4.20	— 1.00		
% + or —.						— .29	— 1.30
No. D. R.	4	13	2	6	1		
Excl. D. R.	+ .32	— .11	— .90	— 1.95		— .29	
				+ .270			— 1.30

The statement may hence be made that so far as the records of the Portland Gas & Coke Company would indicate, a meter does not progressively become less accurate due to the length of time in service. It may be stated as a logical deduction that this will be true of a similar type of meter no matter where installed, under similar conditions, and we may hence draw the final conclusion that any system of regulation based upon the assumption that meters necessarily become more inaccurate the longer they are in service, is based upon faulty premises.

It is seen, therefore, that any regulation that may be established for the removal of meters due to old age should be established entirely upon an examination of the records of that particular utility and the conditions under which these meters must operate.

To illustrate, the lack of reason in such regulations as now in effect let us consider human beings instead of gas meters. Should we find upon examination of insurance or other statistics that a certain number of human beings at a certain age become diseased in a certain way, are we justified in sending all human beings to a hospital for the treatment of such a disease at the end of the indicated period?

On the other hand, is it not much more logical to send a human being to the hospital when symptoms appear? Even if we should establish similar regulations for human beings as for gas meters, should we not take into consideration, in establishing such regulations, the local health conditions to which the individual is subjected to?

The study of averages is a very misleading study. An average condition may be produced either by slight imperfections in many units or by large imperfections in a few units. If it can be scientifically shown in the case of gas meters that condition of inaccuracy is produced by the imperfection of a few meters than it would seem more logical to attack the problem of securing a correct registration by some other means than by a wholesale removal of meters.

When the gas man succeeds in collecting and presenting the truth of such a condition and he is able to recommend a selective method of meter changes, there is no question in the author's mind but that the various regulatory bodies will willingly amend their rulings accordingly.

It is the author's belief that much of the remedy will be found in prevention rather than cure, and that the life of meters in service can be greatly prolonged by proper attention to the various conditions under which they must operate.

The location of a gas meter with respect to its susceptibility to mechanical injury, temperature variations, condensation, etc., has a varying effect upon the operation, registration and length of its useful service. For

Power is with a good deal of accuracy measured by purpose.—Parkhurst.

purpose of substantiating this contention, 807 meter boxes were inspected and a record made of the conditions under which each meter was operating. The meters were then immediately removed and tested, and result the following recapitulation is set forth:

TABLE NO. 4

EFFECT OF A METER'S LOCATION UPON ITS ACCURACY.

Number	Water in Meter		Exposure to Temp. Variation		Naptha loss in Service
	Basement	Outside	Basement	Outside	
Number	24	5	22	51	6
are O. K.	7		4	6	
are Fast	8	2	11	27	4
are Slow	8	3	7	16	2
are D. R.	—		—	—	—
are Stuck	1		—	2	—
Total O. K.	29.1		18.2	11.7	—
Total Fast	33.3	40.0	45.5	52.8	66.6
Total Slow	33.3	60.0	11.9	31.4	33.3
Total D. R.	—		—	—	—
Total Stuck	4.2		—	3.9	—
or —	+ 1.3	+ 1.0	+ .59	+ .52	+ .50

Number	Meters Insured		Location	
	Basement	Outside	Basement	Outside
Number	110	41	716	91
are O. K.	18	2	94	12
are Fast	72	14	335	47
are Slow	32	12	273	31
are D. R.	—		6	—
are Stuck	—	—	8	1
Total O. K.	16.3	4.9	13.1	13.2
Total Fast	65.5	34.1	46.8	51.8
Total Slow	29.1	29.3	38.2	34.1
Total D. R.	—	—	0.8	—
or —	—	—	1.1	1.1
or —	+ .35	+ .83	+ .98	+ .36

will be noted that where meters were subjected to extreme variations, it was found that they ran fast. Meters listed under the heading, "Temperature same," were invariably subjected to heat alone, in that they were located in basements near a fire, while on the other hand, those located on the side of the building were subjected to the sun's rays, prevailing temperatures below normal were not of great duration to offset the higher temperature exposure.

It will be arbitrarily assume that the life of a gas meter is largely contingent upon the life of its diaphragm, and the conditions under which it operates materially can or shorten the life of the diaphragm.

In attacking the enemies of the diaphragm, it was not advisable to establish, if possible, the average life of a meter under the conditions it was called upon to operate with the Portland Gas & Coke Company. Therefore, examined 60,000 meter repair cards and found that the last 500 diaphragms replacements were after an average of 10 1/2 years, as set forth in the following table:

TABLE NO. 5

FIELD AND SHOP TESTS ON METERS CONSIDERED

Size of Meter	3	5	10	30	45
Number of Meters	52	409	10	9	5
Total Number Years Service	119.19	4351.25	109.34	100.03	56.98
Average Number Years Service	2.32	10.64	10.93	11.11	11.39

Size of Meter	60	100	200	Totals
Number of Meters	1	2	1	500
Total Number Years Service	52.66	57.24	10.62	5129.36
Average Number Years Service	10.53	28.62	10.62	10.25

The Gas Company, by necessity, must depend upon the records of the meter proving room, and for the purpose of verifying that meters tested on consumer's premises would give the same test after removal to proving room, 32 meters were carefully tested under the supervision of an engineer, on the premises of the consumers, by means of a portable test meter. These meters were then immediately removed and transported in the regular manner to the meter proving room, after which they were tested according to the ordinary routine. The findings are set forth in Table No. 6, as follows:

TABLE NO. 6

FIELD AND SHOP TESTS ON METERS CONSIDERED

Number	Location of Meter	Exposure to Temp. Variation	Water in Meter	Is Meter	
				Level	Wound Pile
534	Basement	No	No	Yes	No
4563	Basement	No	No	Yes	No
5627	Basement	No	No	Yes	No
11662	Under House	Yes	No	Yes	No
14727	Basement	Yes	No	Yes	No
15187	Under House	No	No	Yes	No
15582	Basement	No	Yes	Yes	Yes
16011	Basement	No	No	Yes	No
16525	Inside	No	Yes	Yes	No
18342	Basement	No	No	Yes	No
20239	Basement	No	Yes	Yes	No
22001	Basement	No	No	Yes	Yes
22318	Basement	No	No	Yes	No
23052	Hall	No	No	Yes	No
24393	Hall	No	No	Yes	No
24800	Basement	No	No	Yes	No
25669	Living Room	Yes	No	No	No
27214	Inside	Yes	No	No	No
31205	Basement	No	No	Yes	No
37626	Basement	No	No	No	No
38131	Basement	No	No	No	No
39257	Shop	No	No	Yes	No
40923	Under House	No	No	Yes	No
43828	Basement	No	No	Yes	No
48062	Basement	No	No	Yes	No
62126	Basement	No	No	No	No
63786	Basement	No	No	Yes	No
66669	Porch	No	No	Yes	No
70104	Basement	Yes	No	Yes	No
70224	Basement	No	No	Yes	No
81223	Under House	No	No	Yes	No
84918	Basement	No	No	Yes	No

Creditors have better memories than debtors.

FIELD TEST			PROVER TEST		
% Fast	% Slow	D.R.	% Fast	% Slow	D.R.
1.0				6.5	
2.5			2.0		
	1.5			4.	
				1.5	
2.5			5.5		
		D.R.			D.R.
10.0				10.0	
		D.R.			D.R.
		D.R.			D.R.
0.25			+		
		D.R.			D.R.
		D.R.			D.R.
		D.R.			D.R.
3.5			2.		
+			+		
		D.R.			D.R.
		D.R.			D.R.
10.0			8.5		
7.0			4.0		
		D.R.			D.R.
1.25			1.0		
	3.5			3.5	
3.25			3.0		
	3.5			2.0	
2.25			1.0		
2.5			1.0		
	1.5			3.0	
1.5			1.0		
	2.0			2.0	
	1.0			1.0	
	1.0			1.5	
1.0			1.0		
Total	14	9	9	13	10

SUMMARY OF DATA COVERED IN

	FIELD	SHOP
Number tested fast.....	14	13
Average per cent fast.....	2.9	2.3
Number tested slow.....	9	10
Average per cent slow.....	51.2	49.2
Number D. R.....	9	9
Total number tested.....	32	32
(1) Net inaccuracy in field.....		30.1%
(2) Net inaccuracy in shop.....		30.4%
Total difference in per cent.....		0.3

The meters considered in the foregoing tabulation were removed on orders originating from special cases and are not representative of general conditions, but do illustrate the specific points in question.

It must be considered that temperature conditions in the field were not ideal and no corrections were made in this respect, and a slight allowance should be made. To all intent and purposes, the tests in the field confirm the proving room tests.

However, if we must continue to operate under certain arbitrary periods for meter removals, it becomes interesting to compute the economical point resulting from a minimum loss in operating revenue chargeable to improper registration as compared with the cost of periodical meter changes.

For the purpose of this calculation we shall use the operating costs of the Portland Gas & Coke Company.

There are three factors which constitute the major items from a gas company standpoint in connection with this traffic which must be considered separately:

- (1) Frequency of periodical changes and cost thereof.
- (2) Frequency of repairs and cost thereof.
- (3) Loss through improper registration.

....*Cost of Changing*:—The principal item of expense in the cost of changing meters is readily conceded to be *labor*. It is thought, therefore, that more money can be saved in connection with this performance through routing than in any other way. The efficiency of a meter changer may be readily decreased or increased 25 per cent by the mere fact that he is properly or improperly routed.

The operation of changing meters is ordinarily not complicated and can be accomplished by a fitter receiving a medium wage, and having no considerable amount of experience. It should not be construed from these remarks, however, that any workman of average intelligence is a fit man for the job. Workmen assigned to this traffic should be reliable and of a cautious attitude, thoroughly trained in what constitutes the proper location of a meter and capable of reading and properly interpreting the pressure reading of the water gauge. They should know what constitutes good combustion on appliances, and be familiar with the hourly consumption so that they may substitute a larger or smaller meter, as the particular demands may warrant. In the interests of plant investment, the consumer should be furnished with a meter of a capacity not exceeding the demand, while on the other hand, service warrants a meter fully capable of handling the load and not be overloaded.

The next item of importance in connection with the changing of meters, is that of cartage. The horse and wagon is still conceded to be the cheapest in down-town and strictly close in districts. In apartment house districts where a relatively large number of meters are located, a wholesale delivery of meters is the most advantageous, in which the fitter is dispatched on foot or on street car, and remains in that district until work of that character is finished, his meters and supplies being sent to him daily as the work advances.

The Portland Gas & Coke Company has for the past two years used a fleet of motorcycle side-cars in connection with old age changes, to very good advantage.

Cost of Repairs:—The economical repair of meters is probably accomplished more through organization and ample equipment than by all other items combined. The workmen, by necessity, are continually under the eye of the foreman, and inefficient workmen find the meter shop a poor harbor. For this reason, I repeat that an efficient meter shop reflects almost at once the character of management.

The meter shop also very readily lends itself to a bonus system of compensation for the workmen, and it is recommended that any who are not employing the bonus system should, where circumstances permit, give this idea a trial.

Purpose directs energy, and purpose makes energy.—Parkhurst.

er economy will be attained through the standardization of meters, that is to say, additions to plant should be of one given make, as near as possible. The old saying that "Practice makes perfect," holds good in connection with the meter shop if workmen become familiar and are called upon to install a larger number of the same type of meters. Standardization of meters not only facilitates the work in the meter shop, but greatly simplifies the laying out of repair parts together with the changing and repairing of meters in the field.

Through Improper Registration. For the purpose of this computation we will assume that meters are changed at the expiration of an arbitrary period. We assume that such inaccuracy increases at the rate of one-half per cent per annum, hence we have the following tabulation of inaccuracy, and corresponding revenue.

TABLE NO. 7

Per Annum Per Customer Based on Average Monthly Gas Bill of 5,255 Cubic Feet

Per Cent Accuracy	Accumulative Yearly Loss in Cubic Feet	Accumulative Yearly Loss, Dollars
1	195	\$0.26
1	391	0.52
1 1/2	587	0.78
2	783	1.04
2 1/2	978	1.30
3	1174	1.56
3 1/2	1370	1.82
4	1566	2.08
4 1/2	1761	2.34
5	1957	2.60

From the above it now becomes possible to draw up a table showing the yearly cost incurred by leaving the meters in service under the preceding conditions, which is given below:

Loss of Revenue Due to Inaccuracy	Cost of Repairs to Meters	Cost of Changes in Meters	Total Accumulative Cost	Average Annual Cost
\$0.26	\$1.85	\$1.40	\$3.57	\$3.57
0.52	1.85	1.40	3.83	1.91
0.78	1.85	1.40	4.03	1.96
1.04	1.85	1.40	4.33	1.99
1.30	1.85	1.40	4.61	2.02
1.56	1.85	1.40	4.87	2.05
1.82	1.85	1.40	5.11	2.07
2.08	1.85	1.40	5.33	2.09
2.34	1.85	1.40	5.59	2.12
2.60	1.85	1.40	5.91	2.15

From the above tabulation it is seen under the assumed conditions that the minimum combined loss in revenue rating expense is incurred with meter changes made at the tenth year.

Similar calculations can be made for any particular situation.

It must be remembered, however, that the minimum loss from an operating standpoint in connection with this tabulation will vary from year to year, depending on the fluctuation in the cost of labor and material. Consider, therefore, that the cost of labor and material listed in the foregoing are now at their peak. In the event that the labor and material decline in cost, then the lower cost of meter changes and repairs would materially increase the length of time a meter could be left in service. While on the other hand the calculation is affected by a change in the rates for gas.

Since we have established 10 1/2 years as being the average life of diaphragms removed from at least 500 meters, then we may reasonably assume that the maximum period of continuous service for a gas meter should not exceed ten years.

The analysis of the Portland Gas & Coke Company's meter records as set out in the foregoing plainly shows that it is not necessary to change meters every five years in order to insure the customer or the company against undue loss.

It is definitely shown that the inaccuracies of our meters do not warrant changing on account of old age within a period of less than ten years. How much longer a meter could reasonably remain in service our statistics do not clearly divulge, due principally to the fact that a sufficient number of meters were not available for test that had been in continual service in excess of ten years.

Our findings do prove that it is an expensive policy to remove meters at the end of five years. Our findings do indicate that we should have an opportunity to give the question of old age meter change further consideration and investigation by leaving meters in service for a period of years sufficient to enable us to establish a danger point.

Our computations do show the fact that it costs \$4.61 to maintain a meter in service for five years, or an average of 92 cents per year, which sum of money includes the loss through inaccuracy, cost of changes and repairs.

Whereas, if the same meter were allowed to continue in service for at least ten years, our total expense from the same meter would amount to \$5.91, or an average of 59 cents cost per year. It is evident, therefore, that a saving of 33 cents per meter per year is accomplished on a ten-year change program.

The Portland Gas & Coke Company has 75,000 meters in use, and 15,000 meters are changed yearly for old age reasons on the five year policy. Our operating expense and loss through registration on 15,000 meters at \$4.61 per meter would amount to a yearly sum of \$69,150.

On the other hand, if meters were allowed to remain in service for ten years, our average yearly expense would equal \$54,925, or a saving of 11 cents per meter, or \$24,825 per year, in favor of the ten-year program.

It is a point easily overlooked that meters should be kept up to date. The facts brought out in this paper do not indicate that a five-year old age meter change

who is not ashamed of himself need not be ashamed of his early condition.—Webster

policy represents judicial expenditure. It is the opinion of the author that if necessary, a more liberal use of complaint recording meters, a more liberal use of high bill inspectors, coupled with more attention by book-keepers to consumers' accounts, would, as compared with the expense incurred in connection with old age meter changes, save more money for the company and be more beneficial to the consumer.

SUMMARY

(1) The foregoing tabulations and supporting information lead us to believe that the findings of the modern meter proving room are representative of conditions on consumers' premises.

(2) That the average life of diaphragms is not materially affected on account of the location of a meter, that is set in keeping with the modern interpretation of good practice, and not subjected to high temperatures.

(3) A tabulation of 27,484 meters removed from service of the Portland Gas & Coke Company shows no definite relationship between accuracy of registration and length of period in service.

(4) A logical deduction would be that meters should be changed for cause rather than arbitrarily.

(5) The correct registration of meters is preferably attained by controlling the conditions under which they operate rather than by frequent removals from service.

(6) Given the cost of repairing meters, changing meters and having assumed further that a progressive inaccuracy exists, it is possible by mathematical computation to indicate for these particular conditions the period of time during which a meter may be allowed to remain in service.

(7) That the length of continuous service of a meter is contingent upon the life of its diaphragm.

—Courtesy Pacific Coast Gas Association.

GAS-MAIN STOPPERS

IN 1897 a gas-main-stopper was placed upon the market that has found a splendid field for itself, a field ever increasing with the tremendous increase in gas-main mileage. These stoppers and their partial parallels, viz.: gas main bags, provide dependable shut-off facilities in gas mains; the stoppers acting more than anything else like wooden plugs since they wedge themselves into a main firm and tight.

Safety, dependability, and security are the "three-graces" that are a necessity where gas is to be shut-off in a main during repairs, alterations or the making of connections.

That feeling of dread and fear which is often experienced by superintendents using other methods for stopping-off the gas is a condition that need not exist and will not, where these stoppers and only dependable and approved bags are used of the Goodman type.

It is quite possible that in the two fields of gas, manufactured and natural, there are many who are not aware of the fact that stoppers and bags such as we have mentioned are to be had. We say this because there are constantly changes taking place, new men are being placed in charge and men are being moved from companies using old methods to important positions with other companies that are progressive, yet may not yet have adopted this system.

We recently dropped a line to Mr. Patrick Goodman, owner of the Safety Gas Main Stopper Company, asking information regarding the use of these appliances in cast iron lines and steel lines, respectively of manufactured gas companies and natural gas companies. In reply Mr. Goodman states that while naturally any form of bag will find best resistance on the interior of a main where it is rough rather than smooth, viz.: in a cast iron main as compared with a steel main, yet with smooth surfaces the canvas covered bags hold more securely than plain rubber bags, though in dry mains the rubber also holds well.

A gas superintendent, recently in speaking of his use of these stoppers and bags, said, 'I had occasion to use a stopper in a wrought iron pipe that had been somewhat flattened out of shape. A stopper because of the unshapely form of the main would not hold alone, but notwithstanding the misshapen wrought pipe I was able to hold absolutely by using both a stopper and a bag.' Thus, it will be seen that even a misshapen main can be made tight with these Goodman appliances.

Directions are given for the use of these appliances and when followed their service is guaranteed, yet like a pneumatic tire on an automobile, a condition might arise causing a blow-out after a tire had been in service, though not attributable to a defect in the tire. So such is possible with a bag used in stopping a main. Such condition, however, does not exist where a regularly built gas main stopper is used in place of a bag. A stopper is the acme of service. A bag comes next. These Goodman stoppers are made from four three inch up to 48 inch and a Goodman gas main stopper of twenty four inch can be inserted and the gas shut off in thirty seconds after the plug has been removed. The stopper is made of steel spring parts, properly cushioned and covered with leather and canvas, so when expanded in pipe, tightness is made sure; it cannot collapse or burst or give way under pressure, nor can it be pricked from the rough edges of pipe.

Taps may be had to admit of stoppers up to forty eight inches in diameter and stoppers may be had up to that same large diameter. The canvas covered bags we are told are sold on trial, these in sizes from four to twenty inches, while the plain rubber bags are in sizes from two to twenty inches.

In general, pride is at the bottom of all great mistakes.—Ruskin.

Science In Advertising

*How to Interest, How to Drive Home, How to
Bring Results*

G. F. ELLESTON, G. D. MANTLE, C. B. BABINEK

The man who has charge of the Gas Company advertising will realize, once and for all, that he has at his command as definite a set of laws, and as definite reactions following the use of these laws, as his brother in charge of manufacture, it will not be necessary to point out ready of efficient publicity to the public utilities men and reports. The necessity will make itself in the results obtained.

factory returns can not be obtained from publicity defies the fundamental psychological laws of using

every advertisement there are two prime factors to be advertised, be it gas, an appliance or itself of the Corporation, and the market for the

The object of the advertisement being simply the former to the latter. The fundamental laws returning follow from this.

Advertisement Must Be Read. To effect any is first of all necessary that the advertisement be read. Unless the copy writer can reasonably himself of this his labor is in vain.

The object of the average newspaper reader is to be news rather than the advertisements, the latter compete with the former in interest if they are to attract attention.

To compete with the news there must be in the illustration, in the headline, or in the opening sentence of advertisement something that will attract the attention of the reader from the surrounding columns, and

the headline of the copy must be so written that the interest of the reader, once attracted, will be held until the story is told and the desired reaction has taken place in the reader's mind. It is a proof of the good advertisement if it is remembered by the average reader four hours after it is read.

The value of an illustration to attract attention and to summarize the story, there can be no question. For every work a good line drawing with plenty of contrast can be excelled. The illustration must, however, have a definite relation to the copy. Illustrations which have no connection with the copy are worse than useless.

The illustration itself must have interest. A simple drawing of a water heater or a gas range attracts the attention only of a few who are actually interested in

these appliances. An illustration of one of these appliances in connection with some action on the part of the figures which is sufficiently out of the ordinary to excite curiosity has, however, a definite value which is too often overlooked even by experienced copy writers.

Should the use of an illustration prove impracticable on the score of expense, careful thought must be given to the headline and to the opening sentence.

Here again the greatest care must be exercised that the headline and opening sentence have a direct relation to the copy. We all remember the disappointed feeling following the reading of one of the old time advertisements which started off with what appeared to be the thrilling details of a bloody murder and ended up with an invitation to use someone's pink pills.

It is the copy writer's duty to find the human interest side of a seemingly dull subject and to play upon the feelings of his readers with that interest.

Instincts To Be Appealed To. In order to use this interest effectively, it is necessary to appeal to one or more of the human instincts.

Those most easily touched by the advertisements issued by a Gas Company are as follows:

(1) Appetite (Hunger, Tastefulness). Applicable particularly to gas cooking appliances.

(2) Comfort. Applicable to all gas appliances from a labor saving standpoint, particularly applicable to water and house heating.

(3) Devotion (Faithfulness, Loyalty). The point of appeal in all goodwill advertisements, also used in appeals to one member of a household to purchase appliances for the convenience of another, and, most important, the love of a mother for her children.

(4) Fear (Timidity, Caution). May be used with discretion in pointing out the safety of a gas as compared with other fuels.

(5) Humor. Should be used with caution. The reader is apt to remember the joke and forget the advertisement. It is difficult to take seriously a subject which is treated humorously.

(6) Acquiescence. This includes the bargaining instinct and is one of the most valuable appeals if not overdone. The most successful bargains are frequent. When you put on a sale, put it on at the right time and if you advertise a bargain let it be a bargain.

Nothing is more short-lived than pride.—Johnson.

(7) Competition—The instinct of the average person is to want everything just as good as her neighbor and a little bit better.

(8) Curiosity—A particularly valuable appeal in putting a new or little known appliance on the market. In fact the most valuable appeal of all in this case. Just tell sufficient of the story to make the reader ask for the balance of the information. Everyone wants to know why the wheels go round.

(9) Ornamentation—Appeals to the aesthetic side of the reader. A particularly strong instinct of the modern woman.

(10) Imitation—The instinct to follow the fashions. If sixty per cent of the houses on one street are heated with gas, it is easier to sell the balance than if none of the other houses were using gas house heating appliances. This instinct is always a good one to appeal to in closing an advertisement whenever it is possible.

(11) Cleanliness—An instinct which is strongly appealed to by all gas appliances.

Do not attempt to appeal to all the instincts at once. The result would simply be confusing. Plan a series of advertisements each appealing to one or perhaps two or three allied instincts.

Presuming that the copy writer has decided on an illustration or head line which will attract the attention of his reader from the surrounding news and advertising matter and that he has decided upon the instinct or instincts to which he desires to appeal, he has still to fill three other fundamental demands. He must (1) Hold the interest of the reader until his closing sentence is read; (2) He must create a desire for possession of whatever he may be advertising; (3) He must stimulate action on the part of his reader to complete the act of possession.

These three, with the attraction of attention, form the links of a chain. All are useless if one is broken or missing.

To hold the reader's interest, the copy must be clear; it must be concise, it must be absolutely convincing; it must be written in simple, non-technical English which flows readily and evenly; it must stay unwaveringly by the subject at hand without an extraneous word.

To create desire, the copy writer must place himself unreservedly in the place of the reader. The points which would naturally appeal to the writer may not appeal to his prospects at all. He must play upon every sensation affecting the instinct he is appealing to, gradually building the desire to a climax before he comes to his closing stimulant to action.

Bald cataloging of the merits of an article creates little desire. It is only by picturing what these merits actually mean to the reader that they can be driven home, and it is in emphasizing this actual application that the illustration can be best utilized. If the copy writer can make his reader mentally picture the appli-

ance in use in his, or her, home, he has gone a long way towards achieving his object.

The closing stimulation to action should be brief but full of punch. To omit this stimulation is to allow the advertisement to pass out of the reader's memory. The easier the action by which the sale can be completed, the more effective will be the advertisement. The use of the telephone is always to be encouraged and a postal card is easier to write than a letter. Coupons are excellent for certain types of advertisements.

Gas Companies are in a favorable position as compared with other merchants in that many people call at the office to pay their bill. Advantage might well be taken of this in advertisements.

Copy is generally divided into two classes: (1) "Human Interest," which appeals almost entirely to the instincts and very little to the reason; and (2) "Reason Why," which appeals to the reason rather than the instincts. Both are valuable and may be applied to most types of gas appliances. In general, it may be said that men are more susceptible to "Reason Why" copy and women to "Human Interest." It may also be said that appeals to the purely practical instincts demand "Reason Why" copy, and appeals to the aesthetic instincts "Human Interest" copy.

Do not exaggerate; do not use superlatives; do not try to say too much; write as you would talk to your reader.

A salesman does a good day's work if he talks to twenty prospects. Do not try to write a message to thousands in ten minutes.

Goodwill Advertising:—In goodwill advertising the instincts to be appealed to are limited to Curiosity, Devotion and Pride (particularly Civic Pride). The creation of a desire to purchase is replaced by the creation of sympathy with the objects of the corporation and the stimulation to action is replaced by a strong summing up of the preceding copy. Some form of climax is an essential to every advertisement if any permanent impression is to be left on the memory.

Owing to the limited number of instincts to be appealed to, and the fact that those instincts are less easily approached than any of the others, Goodwill Advertising requires far more skill than any other and rare, indeed, is the copy writer who can give his advertisements the necessary punch and at the same time achieve his object by selling confidence in the corporation to his readers.

The delusion that every public utility corporation is an octopus existing solely for the purpose of draining the life blood of the consumer is deep seated even in these enlightened times, and it is only by the greatest test and real frankness that this prejudice can be overcome.

Though it is essential that the public should realize that a very small portion of the earnings goes into the

Justice is exalted, strengthened, and honored by the judicious praise of merit.—Winter.

100 Part 1: *Part 1: The Basics*

SECRET

On 12 June 1992, the 1st Cavalry Division was alerted to a possible chemical attack in the vicinity of the 1st Cavalry Division's area of operations. The 1st Cavalry Division was alerted to a possible chemical attack in the vicinity of the 1st Cavalry Division's area of operations. The 1st Cavalry Division was alerted to a possible chemical attack in the vicinity of the 1st Cavalry Division's area of operations.

Oklahoma operators instead of changing their plants to combination compression and oil plants should change to compression and solid absorbent plants. This is said with a firm conviction that it is the economical thing to do. The writer's viewpoint here is entirely that of a petroleum engineer, convinced that the solid absorbent process is the next economical step in the progress of the natural gas line industry. Not only that, but they will displace the oil process for the extraction of "light" oil from artificial gas, will be used in refineries for recovering gasoline from tail gas from tank gas and in many industries for recovering valuable solvents. Their further use will consist in making close fractionation cuts of mixtures, as in combination purification and extraction work as in recovering gasoline from "sulphur" gases. There is a big field ahead for them. This is my prediction.

12-00000000000000000000

le have prejudices against a nation in which they have no acquaintances.—Hamerton.

Meter Construction

A Clear and Concise Setting Forth of Facts Pertaining to Meter Construction and Operation

By OTTO GOLDKAMP and C. M. VAIDEN
Foremen of Gas Meter Shop and of the Record Department, San Diego
Gas & Electric Co., San Diego, Cal.

We have found in our chats with the commercial men of gas companies and we have had many man-to-man chats of this nature throughout the country, that comparatively few are they who know how a gas meter is constructed, or know how it operates, or understand the direction of the flow of gas and the means of operating the hands on the dial.

We publish the following from "Glow," issued for the employees of that well organized San Diego gas company

IN the early days of the industry, before the invention of the gas meter, consumers were supplied with gas on a "time used" contract; that is, a flat rate was paid for a certain number of lights to be burned a specified number of hours each night. If the consumer burned his lights past the hour specified in his contract, it was the duty of an inspector to notify him by rapping on the premises with an iron rod. If the consumer persisted in disobedience, the inspector would shut off the supply at the sidewalk service tap. Disputes between the consumer and the gas

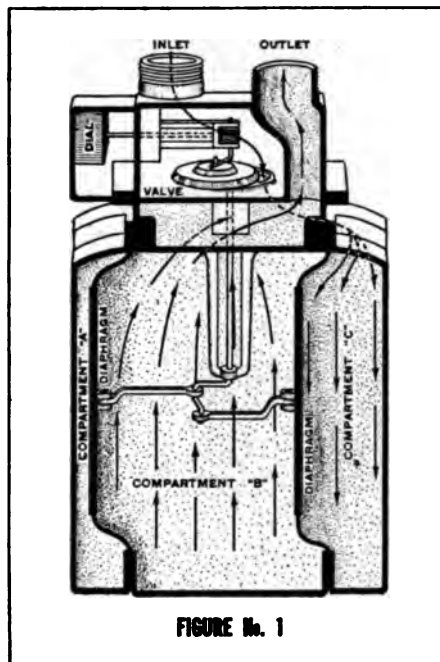


FIGURE No. 1

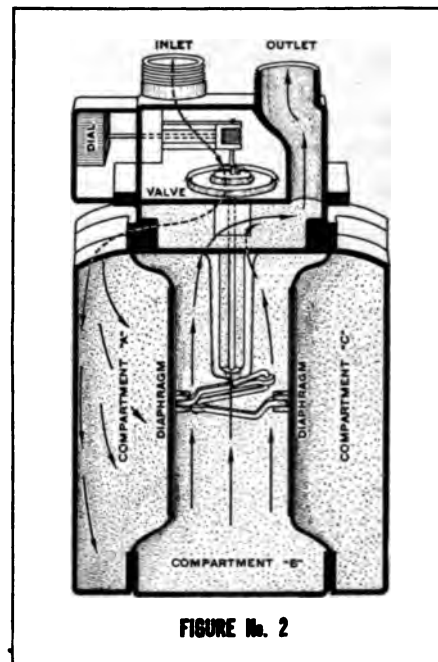


FIGURE No. 2

in California, in order that such as have more recently come into the employ of gas companies in the revivifying of commercial departments, may gain an accurate and comprehensive idea of meter construction and meter operation.

While publishing this article with illustrations for the benefit of those we have named, we at the same time would suggest that the use of such illustrations as are here shown, with concise descriptive matter, or matter written more in story form, might well be presented before the peoples of our cities that they might better comprehend how well constructed, how simple, and likewise how accurate must be the meters that practically unerringly click, click, click while gas is being used in the home, in the shop, and elsewhere. The following is the descriptive matter as prepared by the authors:—
Editor's note.

company were, of course, quite numerous and, therefore, a device for measuring the quantity of gas actually delivered became a matter of necessity.

First invented over one hundred years ago the gas meter has since been gradually improved until today a more simple and accurate mechanism would be difficult to find.

Structural Features:—By referring to the four accompanying sketches, the construction and operation of the meter may be more readily understood.

Its main parts consist of an outer case, two diaphragms, connecting arms, a valve and recording device.

Purpose is what gives life a meaning.—Parkhurst.

diaphragms, which are made of the finest grade of rubber, are arranged to act as a bellows expanding and contracting similar to an accordion. They also serve as valves which divide the meter into three compartments.

Principle of Operation. After passing through the inlet valve, the gas enters compartment "A" as shown in Figure 1.

Here its pressure forces the right hand diaphragm inward toward the center of the meter, which releases a part of the gas contained in compartment "A" to be forced through the outlet as indicated.

For full details of valve openings and gas flow between the different compartments are shown in these sketches, but the path of the gas may be followed by the arrows.

In Figure 2 it will be noted that the diaphragm on the right has reached the limit of its movement inward, and through the action of the connecting arm has shifted

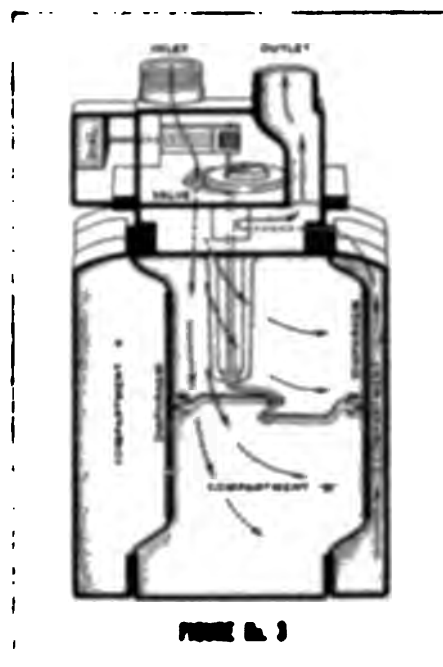
to return back and discharge the gas between it and the side of the meter case, in compartment "C".

After which (see figure 4), the left diaphragm is forced back in a similar manner and discharges the gas in compartment "A".

This series of operations is repeated as long as gas is delivered through the meter.

Through automatic distribution of the incoming gas to the different compartments, by means of the valve, only one diaphragm is put in full motion at a time.

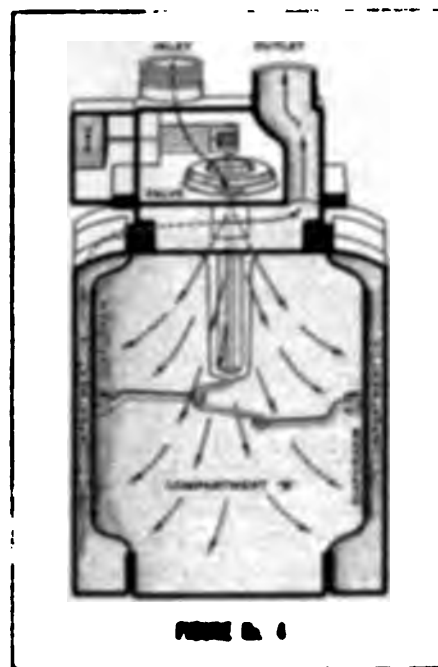
To determine what quantity of gas has been passed over any period, it is only necessary to ascertain the number of times each compartment has been filled and emptied, the sizes of the compartments being standard and accurately known. As the emptying of the compartments depends on the movements of the valve, this measurement resolves itself into a matter of counting the valve revolutions. Through simple connections such



to a new position, opening a passage through which gas flows into compartment "A," behind the left diaphragm. The left diaphragm is now forced toward the center of the meter, further decreasing the space in compartment "B" and forcing more gas through the outlet.

The ongoing movement of the left diaphragm has shifted the position of the valve. This closes the passage to compartment "B" but opens an inlet which allows incoming gas to enter.

Referring to Figure 3, the pressure of the incoming gas is seen to force the diaphragm on the right



counting is automatically registered on the meter dial and directly converted into the cubic feet equivalent of gas passed.

Insurances Favor the Customer. Although seldom out of order, the meter occasionally is injured so that it does not register correctly. There occur four general classes of disorder in meters, commonly known as "stuck," "dead," "fast," or "slow." In such instances it may be of interest to mention that the percentage of error is generally in favor of the consumer. In two cases the meter permits more gas to be delivered than is registered and in a third case it simply becomes clogged and the supply of gas is shut off, with consequently no registration.

Consideration gets as many victories as rashness loses

STANDARDIZATION OF INDUSTRIES

IN a communication received by our editorial department setting forth what is being done by the American Engineering Standards Committee, Mr. A. A. Stevenson of Philadelphia writes:

"The relation of the great Federal research bureaus to industrial standardization is no less important than that of the great purchasing bureaus. Research and standardization are very closely related, and in many ways they are supplementary. By showing the need of reliable information as to the facts, in order to determine the best practice, and secure agreements on moot questions, standardization acts as a powerful stimulus to research and development. But what is of even greater importance, standardization is a principal means of getting the results of research and development work into actual use in the industries, so that the industries themselves, and finally the general public, may reap the advantages.

One of the most direct and effective methods of getting the results of the investigational work of the research bureaus introduced into, and of service to the industries, is by co-operation between the research bureaus and the industries, through working standardization committees, which must necessarily be joint committees of the various bodies interested in each specific project. The many advantages of such co-operation, both to the industries and to the bureaus, are obvious.

What is no less important, such co-operation is very effective in helping to extend a knowledge and appreciation of the work of the bureau in the associations speaking for the industry. As illustrating the significance of this, considerably more than a hundred national organizations are now co-operating through accredited representatives in the work of standardizing committees functioning under the auspices and rules of procedure of the American Engineering Standards Committee. In this work the Bureau of Standards, the Bureau of Mines, and the Forest Service are taking a very active part, and in so doing are rendering extremely important services to their respective industries. This co-operative work will be no less valuable to these bureaus than it is to industry.

Clearing House for Standardization Essential:—In order that standardization along national lines may be brought about, it is necessary that there be some central body to act as a clearing house in standardization work. It is essential that there be brought together information concerning the organizations by which standards have been formulated and are being promulgated and details relating to such standards as are already in use. From the central body charged with the duty of collecting this information, it should be transmitted promptly wherever needed to insure the elimination of conflicts in the formulation of standards. The success to be expected from a central body organized for the purposes just stated obviously depends upon the authority invested in it, and

the recognition received by it from the organizations throughout the country doing standardization work.

The need for closer co-operation in order to prevent duplication and the promulgation of conflicting standards in America crystallized in the appointment of a committee by the American Society of Civil Engineers, the American Institute of Mining and Metallurgical Engineers, The American Society of Mechanical Engineers, the American Institute of Electrical Engineers, and the American Society for Testing Materials, which formulated a plan resulting in the organization of a permanent committee made up of representatives of the five societies mentioned and the three Government Departments of War, Navy and Commerce. The Constitution of this committee, the American Engineering Standards Committee, was broadened later to permit the representation of other bodies, and at the present time it has 50 representatives from 18 bodies or groups of bodies, including 7 national engineering societies, 13 national industrial associations, and 5 Government Departments, including the Departments of Agriculture and Interior in addition to the three already mentioned. There are now 37 different national organizations which have accepted sponsorship for a total of 59 projects. In addition, there are 108 co-operating organizations other than the sponsor bodies, bringing the total to 145 national organizations actively co-operating in the work of the American Engineering Standards Committee who have appointed accredited representatives to serve on sectional committees. The Committee does not concern itself with the technical details of the standards submitted to it for approval, or formulated by committees organized under its auspices, but limits its investigations to a study of the procedure followed in developing the standard with particular reference to the representative character of the group of persons by which the standard has been formulated and the organizations by which it has been adopted or approved.

The decision of the American Engineering Standards Committee not to deal with technical details has proved a source of great strength in its real work of insuring the full co-operation of organizations producing standards not in conflict."

We are rapidly approaching a time of sound foundation work upon which to build a better economic and more sound business structure than ever before.

LUCK

LUCK means rising at six o'clock in the morning. The opportunities you have never failed to grasp.

The trains you have never failed to catch.

Luck means the constant and complete use of your own resources,

YOUR degree of "luck" depends upon how you take advantage of opportunities to increase both sales and profit. *The Shur-On Chronicle.*

Set not thyself to attain much rest, but much patience. Benham.

The Gas Fired Boiler

*Selling End Discussed and Splendid Suggestions
Offered*

BY F. W. ROCHFICAULD

It is better that the user of steam understands that may be met by gas boilers should install boiler as near his work as possible, getting hot dry steam, employing automatic gas boiler to insure constant steam being available for production.

Gas is fed up to twenty four inches or more, needs no engineer. All of those costs surrounding the employing and re-employing are done away with. Of course, with large boiler installations, for in such cases necessary to employ an engineer, yet there time can be devoted to some other work, for does not need his service all the time, man can earn his wages in many ways in factory.

Fuel on the gas boiler depends entirely

When production is stopped, the fuel burner easily gotten up at any time. It is to be taken into the coal bin or to carry cord, and if necessary is to light the pilot and is a few short time everything is ready.

The time for getting up steam on a gas boiler is depending entirely on the asked. If the stop valve of the boiler is cracked takes twenty to thirty minutes to enable to start of the small boiler plants, irregular, and there is nothing bettered boiler to handle such plants, because with the gas boiler. It is impossible to compare with the coal boiler because the conditions. A gas steam boiler is compared to gas at a very high thermal efficiency. A gas boiler of the fire tube type, the tubes set up in a small diameter in order to heat in a small diameter, more direct contact with the water in the boiler. It is automatic, and placing it near the work, it gives an advantage by the steam, and the radiation loss through must also be considered. The problem is the heat, the heat, the heat that is in the saving the heat, the heat to the point water will be the efficiency of the plant.

Some of the main questions that will have to be answered in selling gas boilers are given here.

draft. Even the same chimney is affected by the change of wind, and atmospheric conditions. In one case more steam than is necessary would be made, and another time, it would be difficult to get enough steam. Poor firing also affects the efficiency. Up to the present time, the coal boiler has not been made entirely automatic. Considering the above, the efficiency of the coal boiler is very uncertain. Boiler repairs are much higher on the coal boiler. Replacing of burnt grate bars, and deterioration of plant from wetting ashes around boiler count up quickly.

Gas steam boilers may be divided into two classes, high and low pressure. By high pressure, I mean any pressure over fifteen pounds gauge. By low pressure, I mean below 15 pounds gauge.

High pressure boilers are excellent applications where high temperatures are desired, such as candy factories, where the use of vacuum kettles is employed. They are also used in the following instances: Hat factories for hydraulic presses, driers and hat steamers, creameries, for pasteurizing milk, heating water, washing cans and bottles, refrigeration plants of the absorption type for heating the aqua solution in the generator. Shoe factories for toe-steamers, dry rooms and wax heaters. Clothing manufacturers, for pressing irons, ironing machines and sponging machines, paper supply companies for cooking pot fillings, jellies and creams, bakeries for steaming ovens.

The low pressure boiler should be used wherever possible. It has proven more satisfactory to operate than the high pressure boiler. This is principally on account of greater efficiency. The higher the steam pressure, the greater will be the temperature, consequently the higher the pressure, the greater will be the flow gas losses. The high pressure boiler is not so easily equipped with automatic water feeds. On the low pressure boiler, an automatic feed is easily installed, and with no pressure, and gives the customer a more completely automatic gas-fired steam boiler.

Installations recently made in factories with low pressure boilers are as follows: Packing houses for heating dressing rooms, and heating water for laboratory use, pickle plating works, for heating up to plating tanks, brewers mills, for brewing, dressing, for steamers, for pasteurizing milk, for plating works, for steaming ovens.

A few of the main questions that will have to be answered in selling gas boilers are given here.

arrels would not last long if the fault was only on one side.—La Rochefoucauld.

1. How large a boiler do I need?

The boiler should be large enough to maintain a constant pressure at maximum demand.

2. What will the boiler cost?

Quote the price of the boiler delivered. If figures have to be made for installing, it is much better to quote on the entire installation ready for work. In most cases the piping costs are as much as the boiler itself.

3. What will it cost to install?

There is only one way to handle this, and that is to have an estimate made, and quote with the boiler.

4. What will it cost to operate?

Quote the rated gas consumption of the boiler. You must be careful and not stop at this point. Be sure to impress on the customer's mind that the gas consumption of the boiler means nothing by itself, and it is impossible to determine the monthly gas consumption, even approximately, for this plant consumption depends entirely on production, and as the boiler is automatic, all variations in steam requirements are credited by the gas regulator.

5. How much more will it cost than coal?

Do not allow your customer to compare gas with coal, as I explained above.

6. Will it maintain a certain pressure?

Yes, this pressure will be constant. Always be careful to get the proper size boiler for the job. If the boiler is not figured large enough, it will be only a short time before it is back in the warehouse of the Gas Company, and it is better not to sell at all, if the proper size cannot be installed.

7. Is it safe?

It is safer than any other type of boiler. The fire can be instantly shut off, whereas in the coal boiler, it is necessary to cover the fire with ashes or coal, and then the heat is only partially done away with. If the fire is hauled out, a more terrific temporary heat is created. The gas boiler is automatic and excess pressure is eliminated. In the coal boiler, it cannot be readily checked.

8. How long does it take to get up steam in the morning?

On the boiler, without equipment attached, it takes twenty to thirty minutes for about fifty pounds.

9. Do I need an engineer?

In Massachusetts, any low pressure boiler with police safety valve can be operated without a licensed engineer. This also applies to high pressure boilers twenty-four inches in diameter and under. It is necessary to employ an engineer on high pressure boilers over twenty-four inches in diameter.

10. Where will I set the boiler?

Always place your boiler as near the equipment as possible. The gravity return system in many cases is the most satisfactory. In this case, the boiler is placed on the floor below the equipment if possible, and take

steam lines from the boiler to the different appliances. The returns from the appliances should run back to the lower part of the boiler, using check valves at each appliance, and one at the boiler. In these lines, the only losses are those of radiation. If the boiler is placed on the same floor as the equipment, it is necessary to install either return traps and receivers, or pumps and receiver.

11. How long would it take for delivery?

Never specify a definite date, always do your best to get the boiler on the job as soon as possible. Delays mean cancellations.

12. Does your boiler pass the required inspection?

Each State has its own boiler laws, and the salesman should make himself familiar with them, so that he may answer properly.

13. Could I add more equipment to the boiler you specify?

Do not give the customer permission to add any more equipment to the boiler. In most cases they will overload the boiler, and it will eventually mean the loss of a gas consumer.

14. Where do I save by using gas?

The customer saves by having a hot, dry steam when and where he wants it at a short notice. It is the most efficient fuel for the different kinds of work mentioned.

15. How much pressure can I carry?

Know the type of boiler you are selling, if it is high pressure, it generally means any pressure from zero to a hundred pounds. If low pressure, any pressure from zero to fifteen pounds. Higher pressure boilers can be constructed specially.

16. What are the dimensions?

Always give the proper dimensions and never crowd your boiler. Dimensions are usually given in the manufacturer's catalogues.

17. How much does it weigh?

Manufacturer's catalogues usually give the shipping weight, which answers for the purpose.

18. Where can I see one working?

This is where you sell or lose the boiler. If you have been on your job, you will have some very good plants to show him. Always tell the truth, never misrepresent your goods. If you do, you are in danger of being caught, and you will lose the sale. In case you sell the boiler, and you have misrepresented anything, it is worse than ever. Always sell a customer what he should have, rather than what he wants. When a gas salesman once sells the customer, he then becomes a consumer, and he deals with the company thereafter. Always be sure that you are right. Know your boiler and what it will perform, and you will work up a nice steam boiler business for your company.

—By courtesy New England Association of Gas Engineers.

We know what we are, but know not what we may be. Shakespeare.

GAS COMPANY MASKED BALL

A GAIN we find an employees' association heartily enjoying itself during the hours of off-service. In this instance they are the young people of the San Diego Consolidated Gas & Electric Company. More than fifty couples enjoyed the occasion, having adorned themselves in elaborate costumes. Still others appeared in citizens' clothes, augmenting the number, the total attendance being 250.

Our illustration, kindly loaned by the editor of "Glow," pictures a lot of those who attended in costume.

Such congeniality is a mighty fine thing in an organization, and the like is worth cultivating. However, very naturally, care must be exercised to prevent a dominance of thought focusing upon social functions, in view of the fact that when it comes to employment, the major requirement, and rightfully so, is that of business service.

Sherwin was garbed as an Italian and carried a hand-organ.—The first occasion chronicled, where a man led his "better-half."

It remained for Orta Maury, who is husband of one of those in the bookkeeping department, to take the men's prize for most unique costume. He was dressed as a hobo, a perfect character from ruddy nose to dilapidated footwear. All he lacked was the setting of a barn and therein a bed of hay, or he in the corner of a rail fence on a summer's day, to make him appear of the real sort.

In the days of old Commodore Vanderbilt, who has often been quoted as having spoken slightly of the public, the employees of gas companies indulged in no side-play. Those were the hard and fast days. May ours be the day of middle ground between Vanderbilt-conservatism and too-great liberalism.



EMPLOYEES OF THE SAN DIEGO COMPANY ENJOY FANCY DRESS PARTY

We have seen in some instances a tendency to carry the social idea too far. This, however, is not the case in the San Diego Company where things are tempered with excellent judgment on the part of the management and those assisting the management in carrying on social functions.

Prizes were offered for the most elaborate costume worn by a lady. This was awarded to Mrs. E. R. Hollingsworth, the wife of the pleasantly known "Holly" who is of the bookkeeping department. The prize for the most elaborate costume worn by a man was awarded to F. H. Ladd of the collection department. Our correspondent does not state that Mr. Ladd bedecked his person with coins collected and not turned into the collection department, therefore we presume the company had no share in the taking of the prize, but on the contrary that the credit is due to the good taste and good judgment of Mr. Ladd.

The costume of a monkey worn by Mrs. Sherwin, wife of Mr. Emory D. Sherwin of the record department, took the first prize for most unique costume. Mr.

A MARKED COPY FROM KANSAS

ONE of our good friends has sent us a marked copy of a local newspaper which tells the story of gas supply in Ottawa, Kan., where the people are this winter not complaining because of gas shortage. In Ottawa, a city served by the Empire Company, a Doherty interest, the Doherty three-part rate was some time since put into active service, and the marked editorial read as follows:

"Ottawa is enjoying the most adequate gas service in a fair one, as compared to the cost of coal or wood, this winter, thanks to the Empire Company and its three-part rate.

"The price paid by the great majority of consumers in some instances patrons who consume a very small amount of gas pay what would appear to be a high rate for the one or two thousand feet they use monthly, but if they will extend the use of gas to cooking and heating appliances, the rate greatly decreases.

"It is to be desired that the city government continue the present friendly relations with those furnishing Ottawa's gas supply."

Many a man wishes he had all the money he has lost trying to make more.

UTILITIES INCREASING EARNINGS

THE following earnings of 1921 and 1920, also column indicating increases in seven of the Standard Gas & Electric Company properties, are herewith:

Fort Smith Light and Traction Company:

12 months ended	Dec. 31, 1921	1920	Increase
Gross Earnings	\$1,059,048	\$1,070,391	\$ 11,243*
Net Earnings	302,182	300,793	1,389

Louisville Gas and Electric Company:

12 months ended	Dec. 31, 1921	1920	Increase
Gross Earnings	\$4,891,706	\$4,469,317	\$422,389
Net Earnings	2,243,413	2,095,490	147,923

Mobile Electric Company:

12 months ended	Dec. 31, 1921	1920	Increase
Gross Earnings	\$ 764,222	\$ 737,446	\$ 26,776
Net Earnings	251,091	214,081	37,010

Mountain States Power Company:

12 months ended	Dec. 31, 1921	1920	Increase
Gross Earnings	\$ 992,932	\$ 928,923	\$ 64,009
Net Earnings	299,925	294,292	5,633

Puget Sound Gas Company:

12 months ended	Dec. 31, 1921	1920	Increase
Gross Earnings	\$ 168,964	\$ 163,985	\$ 4,979
Net Earnings	29,261	25,916	3,345

San Diego Consolidated Gas and Electric Company:

12 months ended	Dec. 31, 1921	1920	Increase
Gross Earnings	\$3,814,918	\$2,661,040	\$1,153,872
Net Earnings	1,104,898	883,427	221,471

Western States Gas and Electric Company:

12 months ended	Dec. 31, 1921	1920	Increase
Gross Earnings	\$2,547,165	\$2,224,910	\$322,255
Net Earnings	858,677	815,286	43,391

*Decrease.

In the above right-hand column it will be noted but one star appears. This star indicates a decrease. All other items shown in the column indicate increases. We ask what better evidence could we have than these showings that things are developing well in the field of utilities? We publish this statement in order to indicate the trend of the times.

THE CASH BONUS FOR EX-SERVICE MEN

THERE has just been received at our editorial office from the Chamber of Commerce of the United States a setting forth of the result of a referendum vote upon this subject. The result of this ballot showed 72 per cent of the interests forming the National Chamber, voting against the enactment of a law providing such. However, expressions were strong in favor of a form which would not be indiscriminate. In other words, favoring the care of those disabled, etc., such as is now being carried on. Also, assisting others not disabled, but whose needs might require assistance.

It would seem that the desire on the part of the Chamber of Commerce of the United States was not to prevent care of needy ex-soldiers, not an effort backed by a selfish motive, but to arrive at the opinions of a vast number of our very best thinkers as to what course should be followed at the present juncture.

Votes were cast by business organizations in 375 cities, 46 states, in the District of Columbia, Alaska and Hawaii.

In concluding, the communication states:

"Adequate relief for the disabled still remains the first step in the National Chamber's program. A present expenditure of more than \$1,000,000 a day for disabled men is evidence of the desire of the people that those veterans who suffered physical or mental impairment shall be cared for adequately until returned to a life of usefulness and independence. Beyond that point the National Chamber will continue to advocate legislation for the benefit of the healthy uninjured veterans which will include opportunities for vocational training and land settlement aid, constructive measures which are best calculated to make every ex-service man an independent, self-respecting member of his community."

EUREKA'S OUTPUT

AT Eureka, Cal., where the Western States Gas & Electric Company (a Byllesby institution) is under the able management of H. L. Jackson the following figures hold good. The net earnings during the year of 1921 to December 31st, were \$90,899.00, while to November 30th, practically a month shorter period in 1921, the net earnings are shown as \$151,866. The gas output in cubic feet during the 1911 period was 24,120,280, while in the 1921 period the output was 31,710,000.

There are in Eureka 1,224 customers in the gas division as against 718 on February 1st, 1911, showing that the company is pushing ahead in this department, although the growth in number of customers in the electric department in the same company, has been from 2,206 in 1911 to 6,480 in 1921.

SUFFICIENT GAS THIS WINTER

THERE have been many who have asked the question, "why is it that this winter in many cities supplied with natural gas, the volume has been so greatly in excess of the volume at hand during the past few winters?" The public finds it difficult to understand the situation, though it would not be so difficult to grasp were one to hearken in circles of gas interests. However, it is enough to state that the supply in many cities where even suffering from gas shortage occurred a year since, has this winter been such as might be designated "adequate," and communities are happy.

Opportunity makes us known to others, but more to ourselves. La Rochefoucauld.

Making Gas-Thinking Safety

A Comprehensive Study of Accident Hazards Has Enabled One Company to Effect Safety Devices and Practices Which Have Brought About Remarkable Results.

BY H. BLACKBURN HARTE
in the National Safety News.

In view of the fact that certain of the natural gas companies are at present also operating manufactured gas plants, and others will be following the example of such, articles we are printing, in fact any matter pertaining to the making of industries safe for operatives, is well worth attention and consideration.—Editor's note.

handling materials, 24 to foreign particles in eye, and 24 to slipping, tripping and falling. In other words, more than 50 per cent of the gas company's accident problems are the same as those of most other industries—its special hazards are not the biggest problem.

A good idea of the extent and variety of the accident problems of this company can be gained from the following general facts: It serves approximately



GAS GENERATOR VALVES FITTED WITH INTERLOCKING AUTOMATICALLY TIMED CONTROLLING DEVICE

THE importance of getting the men to think safety has been recognized by the People's Gas Light and Coke Company of Chicago and this has been the guiding factor in its safety work. Study of the accident causes of this company that the principal causes of accidents in the gas industry are those which are common to all large enterprises—handling materials, foreign particles in eye, slipping, tripping, and falling. Out of a total of 100 accidents during three months, 30 were due to

700,000 customers, which includes practically every home in the city, and large commercial bakeries, restaurants, and various industrial plants. Normally it operates six gas manufacturing stations and several shops where repair work is done, and from which hundreds of street men are sent out for installation and maintenance work. It supplies gas through 3,000 miles of large distributing mains and 5,000 miles of smaller service mains beneath the streets. It operates a fleet of more than 200 motor vehicles. Its sub-

Politeness has been well defined as benevolence in small things.—Macaulay.

diary companies operate a by-products refining plant which manufactures benzol, toluol, and solvent naphtha; one of the largest skyscrapers in Chicago's loop district, and twelve stores all over the city. In normal times it employs an average of 4,500 men.

The People's Gas Light and Coke Company is one of several Chicago utilities whose safety work was organized and is being conducted under the plans of the Bureau of Safety. Robert M. Jeffries, a safety engineer of the Bureau of Safety, is the bureau's delegated representative for the gas company's safety work and Ernest Beaumont is Supervisor of Safety of the People's Gas Light and Coke Company. J. H. Eustace, Chief Engineer of the company, is chairman of the Central Safety Committee, the backbone of the safety organizations. His assistants, W. G. Rudd and F. E. Luther, and the various executive heads and superintendents of stations and shops, are all actively co-operating in the safety work of the company.

We started our tour of the gas company properties in the generator house of the Division Street Station, which is typical of all the gas manufacturing stations

and closed by a hand wheel operating large heavy gears. It was formerly necessary to put a wedge between these gears to hold them in position, and there



USE OF LIFE BELTS FOR MEN WORKING IN STREET VAULTS

was always the danger of the gears slipping on the man's hand while he was inserting or removing the wedge, and also the danger of the wedge slipping and allowing the valve to open at the wrong time, caus-



QUICK OPENING STEAM LINE VALVES

operated by the company. Formerly, one of the serious hazards in the operation of the huge gas generators, where the first and principal process in the manufacture of illuminating gas is performed, was in the operation of the "hot valve" or "down-run valve" which is used for changing the direction of the flow of steam through the fire. This valve is opened



EASILY MANAGED DRUM FOR SENDING MEN ALOFT TO WORK ON LINES WHERE THERE IS DANGER FROM FUMES

ing an explosion. The use of a heavy iron bar, one end of which is fastened in the steel floor and the

All men commend patience, although few be willing to practise it.—Kempis.

other end of which is hooked onto the spokes of the hand wheel by which the valve gears are turned, has eliminated both the crushed hand, and the explosion hazards.

The different valves which control the blasting of the coke fires and the passage of gas through the various operations in the generators must be handled by skilled men, as improper handling and incorrect timing might cause a serious explosion. As a further precaution against an explosion disaster, there is an explosion port in the main blast line, so that in case an explosion should occur this port would blow out giving a vent to the explosive force and preventing a catastrophe. A further improvement, recently adopted in one station, and which the company contemplates installing in all its stations, is an automatic,



TYPICAL FIRE DRILL AT A GAS STATION

interlocking control system, which eliminates the human element in handling the valves in this process, and thereby the possibility of mistakes. This device will be described later.

Fires and explosions being the biggest disaster possibilities in a gas plant the "No Smoking" rule is rigidly enforced. Fire apparatus is installed at convenient locations throughout—high pressure steam lines with hose connections, as steam is the most effective extinguisher for gas fires; water hose and connections wherever they could be effectively used; large and small chemical extinguishers; and water hand extinguishers. Fire alarm boxes are located at twelve fire stations, and in case an alarm is turned in these connect with the plant whistles, and with bells in all departments, signalling by code the number of the station where the fire is located so that the members of the plant fire crew, scattered in all parts of the plant, know exactly where to go. At the same time the location of the fire station where the alarm was turned in is registered on a ticker in the super-

intendent's office. Fire drills are held at least once a month, and the men never know whether they are going to a drill or a real fire.

The vim and seriousness with which these men take their additional duty was illustrated in a fire drill held especially for the sake of this story. An alarm was turned in from one of the stations. Whistles shrieked and bells clanged everywhere. Almost instantly one man appeared with a hose cart and started unwinding his hose from the reel. In less than a minute one-half of the station fire crew was on the spot. The entire crew, including the men from the most remote parts of the plant, was there with apparatus in less than a minute and a half. Some came with other hose carts, others with chemical extinguishers slung in straps on their backs, pairs of men came with ladders—all ready for immediate action.

As a further precaution against fire and explosion all electric lights used are enclosed in vapor-proof globes. In addition, there is a heavy metal guard outside the glass.

At the North Station we saw this company's most important safety device—a device which engineers and officials of the company say is destined to revolutionize the gas industry. This is the interlocking and automatic timed controlling device for the five valves of the gas generator previously mentioned. It is a counterpart of a railroad interlocking switch and signal system. It entirely eliminates the human element of mistakes, and is foolproof.

On the gas generator there are five important valves, the stack valve, the generator main blast valve, the carburetor valve, the superheater valve, and the hot or down-run valve. These must be opened at correct intervals and in proper sequence. If the timing between them is incorrect, or if one of the valves is opened at a time when another one should have been opened, the result is apt to be a disastrous explosion. Yet it would be a perfectly natural human mistake for a gas maker to pull the wrong lever. To eliminate this hazard the automatic interlocking device was designed and installed.

With this system the levers are interlocked with each other in such a manner that they cannot possibly be opened in improper sequence. It is impossible to pull lever No. 2, the main blast valve, until after lever No. 1, the stack valve, has been opened. It is impossible to pull lever No. 3, the carburetor valve, until after lever No. 2, has been pulled, and so on.

These interlocking levers are used in either automatic or hand control, eliminating the hazard of opening the valves in improper sequence whether the generator is being handled either way. Ordinarily the operation is done automatically by an electric motor and a system of cams on a shaft timed to open and close the various valves at the proper intervals. Each time the generator is charged with coke, however, a slightly longer interval is needed before the opening of the stack valve, so the motor is switched off and the valves temporarily operated by hand, but the in-

Better far to die in the old harness than to try to put on another.—Titcomb.

terlocking device continues to act in either case so that the wrong valve cannot be manipulated. There is also a special safety lever on the motor box used for completely shutting down the generator. In case of emergency all that it is necessary to do is to turn this lever and the automatic controlling system will completely and safely stop all the operations of the generator, shutting off the various valves in the proper rotation and at the proper time so that there can be no explosion.

In the electric generator room of this plant, where the power for the operation of the automatic device is developed, there is a special generator which prevents the voltage from dropping and interfering with the operation of the device, in case there should be any variation in the load on the current from other parts of the plant—a safety device to make the other safety device completely safe.

Another interesting safety device at the North Station, one that could be used in any plant having a boiler room, is a system of lights which keeps the firemen informed of the amount of water in the boilers. This consists of a red and a white light arranged to rise and fall with the water in the water gauges. When the red light is up the fireman knows he needs more water. When the white light is up it indicates that there is sufficient water. The fireman thus knows the conditions without having to come up to read the gauges, and this knowledge at times may mean the prevention of a boiler explosion.

After the gas has passed through the various processes of "scrubbing" to cleanse it and remove the sulphur, and has arrived in the purified colorless state ready for use, it passes into the commercial holder, and thence it is pumped by high pressure exhausters into the distributing system. This distributing system, while designed primarily for efficiency, has an important safety significance in affording a measure of protection to the company's customers against accidental asphyxiation. In the early days of the gas industry gas was delivered only under the pressure of the tank of the commercial holder dropping lower and lower into its well. As a result users nearest the gas station got the highest pressure, and the farther away the consumer was the lower was the pressure. This would result sometimes in the pressure going so low in the lines of some of the more remote customers that the flames would go out. Then when the pressure rose again the gas would flow in, and there was danger that a person would have left the using device valve open and consequently be exposed to asphyxiation, or explosion by carrying a light into the gas filled room.

In the present system of distribution this has been overcome by the installation of some 80 underground vaults in various parts of the city. The gas pumped from the station at high pressure, comes into these vaults from the large mains, and here other high pressure exhausters pump it through the service mains into the homes of consumers. This system prevents the pressure at the consumer end from ever getting so low that

the fire would go out, and gives a constant equal distribution to all customers, regardless of their location with reference to the gas station, and regardless of the load upon the station at any one time.

We next visited the Refining Plant where benzol, toluol, and solvent naphtha are manufactured. Because of the highly explosive character of these chemicals, safety is the most important factor entering into their manufacture and handling. The very location of this plant is a safety measure—it is isolated away out in Hawthorne, a prairie district on the outskirts of the city, three-quarters of a mile from the nearest car line, making it as inaccessible as possible to trespassers and so far away from any homes or other buildings that, in the remote event that an explosion should occur, it would be unlikely that any persons or property other than those on this plant would be in danger.

The plant is surrounded by a high fence, topped with barbed wire, to keep out persons who have no business there. The gate is always locked, and no one is admitted without going through a thorough inquisition and satisfying the gatekeeper that his presence there is for a legitimate purpose. And once admitted the visitor is under the vigilant eye of an escort as long as he is on the premises.

There are two absolute rules on this plant which are enforced to the hilt; the first is that there must be no smoking anywhere on the premises; the second is that every employee must understand the prone pressure method of resuscitation and be qualified in administering it. Furthermore, all the men are required to keep in constant practice on this—practice is part of the routine at every safety meeting, and the safety meetings here are held every two weeks instead of once a month as on the other plants of the gas company.

The buildings on this plant are all built of fire-resisting materials—there is not a bit of wooden construction on the plant. All the glass in windows, skylights and doors is wire-glass which can resist breakage in the heat of a conflagration much better than ordinary glass. All electric switches are located on the outside of the buildings, and enclosed in iron boxes, to prevent the possibility of sparks igniting the highly explosive gases. Telephones are located close to every place where men work, connecting directly with the main office of the plant, so that in case of an emergency all the men can quickly be concentrated in one spot. Workmen use copper hammers only, to avoid the hazard of sparks from steel hammers.

Permanent high pressure steam lines are connected directly into the stills and other apparatus used in the manufacture of this plant's products, and also into the storage tanks located in the yard, so that in case of fire it can be smothered instantly by steam merely by turning a valve. There are valves for this purpose both inside and outside the buildings. Should conditions be such that the men inside the building could not turn on the steam before they make their escape, they could turn it on by a valve located on the outside wall. And in case

Fortune is not content to do a man one ill turn. Bacon.

impracticable or too risky because of the heat men to climb the ladder and reach this valve outside wall of the building, there is a handle 150 feet away from the building which works a which will open the steam valves.

Other fire protection is the insertion of a fusible link in the chains used to hold the window of the building open. In case of fire this link would melt and windows would drop into closed position, stopping air from outside which might fan the fire, and stopping the spread of the fire to other structures.

Other the steam spray system is the chief fire protection chemical and water fire extinguishing apparatus installed at convenient places as auxiliary protection of the dangerous tasks here formerly was repairing gas lines high up on the huge crude stills where fragments of the products of the plants are disintegrated of the crude waste mixture received from the refining gas manufacturing plants. It is frequently necessary to send men high up to make repairs or adjustments on the lines and valves. Often there are fumes which would overcome a man, and if he were taller he would fall and be killed or seriously injured.

To overcome this the safety committee of the company has devised and built a carriage out of an ordinary 100-gallon oil drum. The top of the drum is removed, heavy steel straps are riveted onto the upper rim, and a chain is slung onto the hook of an overhead crane. The straps, and can be moved anywhere that work is to be done. Should a man be overcome, it is possible for him to fall out of the drum, and he can then be lowered by his companions and resuscitated. When tank cars are cleaned on the railroad siding at least the man going into the tank is fitted with a life harness like affair to which is attached a life line. While the man is in the tank another man is stationed on top of the car at the other end of the rope, thus able to keep track of the man inside, and in case of emergency it is an easy matter to drag him out and revive him. It is not necessary to risk another man sending him in to find the first one.

Whenever men are to work inside one of the boilers, the pipes at the rear are first disconnected. They are not knowing there are men in the boiler, make the mistake of turning a valve and admitting steam to the boiler.

The plant, with all its extra-hazardous operations, has kept the entire year 1921 with only one lost time due to a case of an injured finger causing lost time out two weeks.

Next to the West Shop and the West Meter House one of the first things noticed here was that sawways all had a light under the bottom stair. A glass in front of the light prevents a person's feet catching under the stair tread. These lights had been installed to prevent tripping and falling. As they enter the bottom step, the lights besides illuminating sawways generally show a person coming up or down that it is the first or last step, and eliminate tripping and slipping from the common cause of missing the first or last step.

All tools used in the shops are inspected daily by the foremen, and battered or otherwise defective tools weeded out for repairs or discard. An additional inspection of tools is made once a month by the safety department of the company, and the Bureau of Safety.

In the garages, too, safety is receiving serious attention. For example, at the suggestion of the chauffeurs themselves, a white line is painted on the ground six feet outside the garage doors, and another is painted six feet inside the doors. Every machine coming in or out of the garage must come to a complete stop at these white lines while the chauffeur ascertains whether or not another car is coming the other way. At one garage instead of painting these lines two rows of white brick have been laid in the pavement, eliminating the necessity for frequent repainting.

Lessons in public safety are given the drivers, and they are taught that they must have their cars in such control as to avoid accidents even when the accident would really be the fault of a pedestrian or another driver. Everywhere you go on the People's Gas properties, manufacturing plants, shops, or garages, you are impressed with the liberal use made of both National Safety Council bulletins and home made safety bulletins. Permanent safety signs also are conspicuously displayed in each department. Each of these painted signs points out the specific hazards of the particular department in which it is hung. And these signs are read. John Johnson, assistant superintendent of the Division Street Station, described the interest the men take in the bulletins and signs as follows:

"One man will start to read a bulletin pretty soon another man follows suit, and in a few minutes a whole mob has congregated in front of the board reading the bulletins, and discussing among themselves the lessons portrayed."

A fine example of how the men of this company work for safety is Charles La Forge, engineer in the People's Gas Building, the huge skyscraper operated by an auxiliary company of the People's Gas Light and Coke Company. Mr. La Forge was formerly a plant man, and had learned the value of safety work in the gas houses. So when he came to the new building and took charge of the boilers, engines, refrigerating plant, water drainage system, and other machinery connected with the operation of this building, and the heating of a dozen other large buildings supplied with steam by this one, he applied his plant safety knowledge here. In less than one year he has seen to it that practically everything which could do damage is guarded. And still he is not satisfied. He is always on the look out for new things to guard, and when he finds them he immediately acts to take care of them.

The People's Gas Light and Coke Company has been doing safety work for many years, although the present safety organization was not established until 1919. In view of the accident reductions made in the previous

years next to the West Shop and the West Meter House one of the first things noticed here was that sawways all had a light under the bottom stair. A glass in front of the light prevents a person's feet catching under the stair tread. These lights had been installed to prevent tripping and falling. As they enter the bottom step, the lights besides illuminating sawways generally show a person coming up or down that it is the first or last step, and eliminate tripping and slipping from the common cause of missing the first or last step.

All tools used in the shops are inspected daily by the foremen, and battered or otherwise defective tools weeded out for repairs or discard. An additional inspection of tools is made once a month by the safety department of the company, and the Bureau of Safety.

One's piety is best displayed in his pursuits.—Alcott.

years, the further reductions shown in the following comparison of the records of 1920 and 1921 is a creditable one:

	1920	1921
Number of fatal accidents.....	3	2
Number of disability accidents.....	344	288
Total number of accidents.....	830	641
Percentage of employes injured.....	16.86	14.47
Average number of days lost per 100		
100 employes	107.4	100.4
Total number days lost.....	5,289.5	4,619

The People's Gas Light and Coke Company's safety organization places the responsibility for safety not upon one man, or a group of men—but on every man connected with its operations. Executives, foremen, workmen—all are part of the safety organization. Each plant and shop has a safety committee. These committees have intermediate committees representing the groups of departments engaged in the same sort of work. The intermediate committees pass on suggestions that come from the station and shop committees, and turn over to the safety engineer and the central committee on safety such suggestions as need the approval of the management.

It is from the plant and shop safety committees—from the men actually on the job that the majority of the safety suggestions come. Most of the safety measures mentioned in this story, and many others, originated in these safety committees. These committees have proved to be the most prolific source of safety ideas the company has.

In Mr. Beaumont's office I was shown sheafs of minutes of these safety meetings—all crowded with safety suggestions, which had been brought up at the meetings which are held at each plant once a month. The suggestions concern a wide variety of matters—installation of new equipment, improvements for present equipment, repairs about plants such as walkways, railings, and so forth, housekeeping conditions, protection of public around locations where gas company street men are working, and so on endlessly.

It is upon this wealth of safety ideas that the gas company draws for the safety measures it puts into practice. It is upon the imaginations of all its men that it depends for ideas to protect themselves and the general public. The meetings fairly crackle with the suggestions of the men from the gas houses, the streets, and the drivers' seats of trucks and tractors. And there could be no better source of safety ideas than these men. They are sincere and earnest—they know that the safety work is for them—and they are reducing their accidents year by year.

THE PACIFIC COAST WAY



SECTIONAL reunions have become an established feature of the Pacific Coast Gas Association's annual program of activities. It is the custom to hold one in San Francisco, one in Los

Angeles and another in Portland, Ore. The Association, in its membership, embraces every phase of the gas industry on the Pacific Coast, from the public service corporation, manufacturing and distributing gas to consumers, to the manufacturers and salesmen of gas appliances. At these reunions, therefore, there are gas men from every part of the Pacific Coast territory, the best representations in point of number, of course, coming from the three central points named.

The first sectional reunion of the present season was recently held at the Pacific Gas and Electric Company's gas industrial laboratory in San Francisco. This took the form of a get-together dinner, with a program of entertainment and instruction.

At this industrial laboratory, every kind of gas appliance is displayed using gas as an industrial fuel. It made, therefore, a unique setting for a gathering of the kind.

About 150 members assembled and discussed an appetizing menu prepared on the premises, one of the hotel ranges on exhibition being called into requisition for the purpose.

Henry Bostwick of San Francisco, President, was in the chair, while the program of entertainment was under the direction of W. M. Henderson, the Association's able and energetic secretary.

Two speakers from outside of the Association were on the program. Mr. Eustace Cullinan, a well-known attorney of San Francisco, who delivered an able discourse upon proposed legislation affecting the interests not only of the light and power corporations of the State, but, also, the people of the commonwealth themselves, and in emphatic terms he urged the people of California not to be led into errors of political judgment such as had been responsible for the unfortunate conditions in North Dakota and elsewhere.

Mr. Charles W. Duncan, advertising manager of Foster and Fleiser Company, himself a well-known artist, a lecturer at the State University, and generally recognized as an exponent of the doctrine of color, made a very original talk upon color and its effect, through the eye, upon the mind and the energies. Mr. Duncan is the master of his subject, and his address was listened to with intense interest.

Following these speakers, Mr. Fred Pelle of the gas industrial department of "Pacific Service," gave a remarkable demonstration of burning gas in an open flame submerged in a tank of water. This experiment was made possible by the use of the Kemp premixer. The tank used for the purpose had a glass slide, so that the burning gas could be observed by the spectators.

An original industrial gas burner was used and the apparatus started. After the burner warmed up, it was plunged into the water and held at a depth of 10 to 12 inches. It continued to burn all the time it was in this position, the products of combustion passing up and escaping at the surface of the water. The lights of the room were extinguished and the effect was most spectacular, the reflection of the flame upon the water giving it a phosphorescent appearance. Altogether, it was a most interesting demonstration.

Men's business here is to know for the sake of living not for the sake of knowing.—Frederick Harris

AROUND THE BELT

New Wells, New Pipe Lines, New Contracts, Additions and Extensions. A Fund of Valuable News Gathered for the Journal Through Many Sources.

WANTED

Engineer who has had practical experience in handling and distributing Natural Gas. Apply 2247, Natural Gas Industry.

TRADE PERSONALS

Clinkscales, J. H., recently became Natural Gas Conservation Officer for the gas and oil fields near Ponca City, Okla., lately opened up.

Curry, J. P., Agent for the United Gas Company, Sharon, Pa., is away from his post on three months' leave of absence on account of ill health.

Emmert, W. B., formerly President of the United Central Oil Corporation, has been elected President of the White Oil Corporation, which has absorbed the former concern.

Fairchild, F. A., of the Meadville, Pa., office of the United Gas Companies is at present Acting Agent at the company's Sharon, Pa., office, during the absence of J. P. Curry, who is away on leave of absence.

Ferris, R. B., it is reported, has purchased from E. C. Clay the gas interests of the Shaffer County Gas Company. Mr. Ferris has been connected with the First National Bank, Drumwright, Okla.

Fisher, Harmon F., has been appointed Engineer for the Research Division of the American Petroleum Institute.

Hagan, O. C., of the Ohio Fuel Supply Company, Columbus, Ohio, has returned to his desk after a month's vacation in Florida and Cuba.

Pearson, H. B., is now President and Managing Director of the Canadian Western Natural Gas Company, Calgary, Alberta.

Rainsford, Capt. Ralph, has been appointed to the post of Chief Engineer of the Philadelphia Company, Pittsburgh.

Reichard, C. W., is now representative for Lee C. Moore & Company in the Northern Pennsylvania territory. Mr. Reichard's headquarters will be at Butler, Pa.

Uhlenhaut, F., has resigned as Chief Engineer of the Philadelphia Company, Pittsburgh.

NEW FRANCHISES

ARKANSAS—*Alma*—E. K. Hale has been granted a franchise to establish a distributing system in this city. The gas will be brought from the Kibler field.

OKLAHOMA—*Pauls Valley*—This town, as well as Purcell and Wynnewood, have granted a franchise to the Cozart Gas Company of Blackwell. The gas will be piped from the field near Elmore City, Garvin County.

ITEMS OF FINANCE

NEW YORK—*New York City*—Stockholders of the White Oil Corporation recently approved the merger of its interests with the United Gas & Electric Corporation. The White Oil Corporation by this consolidation also acquires the properties and assets of the United Central Oil Corporation and its subsidiaries, previously owned by the United Gas & Electric Corporation.

In consideration of these properties the stockholders of the White Oil authorized an issue of \$1,500,000 8 per cent cumulative preferred stock and the transfer of this stock to United Gas & Electric in addition to 170,000 shares White Oil common and an option for one year on 100,000 shares additional common stock.

P. J. White, now president of the White Oil Corporation, is to be chairman of the board of the consolidated company and S. W. Emmert, former president of the United Central Oil Corporation, is president of the White Oil. The headquarters office of the company will be in Houston, Tex.

PENNSYLVANIA—*Pittsburgh*—Report of the Union Natural Gas Corporation and affiliated companies for 1921 shows a net surplus of \$533,338. Total operating revenue is shown as \$7,350,149; operating expenses, \$6,103,048; other income, \$261,271; interest, \$134,882; profit and loss credit adjustment, \$143,847; dividends, \$984,000.

TEXAS—*Houston*—The Houston Gas & Fuel Company is offering for sale \$1,200,000 refunding and improvement first mortgage gold bonds due 1932 at 91 and interest. The securities will yield around 6.17 per cent.

To persevere in one's duty and be silent is the best answer to calumny.—Washington.

INCORPORATED

COLORADO—*Rocky Ford*—The L. & C. Oil, Gas, Mineral Development Company has been incorporated by G. M. Coffman, J. B. Tilley and L. F. Tilley with a capital stock of \$50,000.

TEXAS—*Westbrook*—The Westbrook Oil & Gas Company has been organized here by J. O. Brown and associates. The concern is capitalized at \$100,000 and was organized to drill one or more tests in the Mitchell County field, near Westbrook, nine miles west from Colorado.

Mr. Brown is president and treasurer of the organization and T. E. Hodges is general manager. A. L. Buford is to represent the company as field manager. General offices are to be maintained at Westbrook.

WEST VIRGINIA—*Grafton*—The Weathy Oil & Gas Company has been incorporated with a capital stock of \$25,000. Those named as incorporators are: H. W. Tobias, John R. Thayer, P. H. McGrady, J. Guy Allender, F. S. Suddarth, Grafton.

Logan—The Milton Oil & Gas Company, capital \$50,000, has been organized by Miller Farley, Clyde Scaggs, Logan; R. H. Stewart, Milton; G. H. Marting, Pineville, Ky., and Q. L. Stewart, Madison, W. Va.

PER CUBIC FOOT—RATES

NEW YORK—*Batavia*—The Republic Heat, Light & Power Company, serving this city and other towns and villages of Western New York, has increased its rates from 55 cents net to 70 cents per thousand.

OKLAHOMA—*Creek County*—A rate of 40 cents per thousand is now in effect with the Creek County Gas Company and the Tippet Pipe Line Company in selling its product to farmers located along the lines of both companies. The previous rate was \$1.00 for the first thousand, and 35 cents for each additional thousand.

Garber—The Garber Gas & Fuel Company has been granted permission to increase its rates from 50 to 75 cents per thousand.

Skiatook—The Skiatook Gas Company has been granted permission to increase its rate for domestic uses from 40 to 50 cents per thousand, while the industrial rate will be 30 cents per thousand. This action followed the making of a five-year contract by the Skiatook Company with the Owen Osage Gas Company for sufficient gas supply to take care of the needs of local customers.

Stillwater—A new rate of 40 cents per thousand has been adopted by the Mullendore Gas Company.

GENERAL

CALIFORNIA—*Los Angeles*—A company to be known as the Pacific Engineers has been formed by C. O. Nordenson, former General Manager of the Duquesne Burner Service Company and the Gas Combustion Company, O. E. Freeman and F. S. Bitgood.

COLORADO—*Meeker*—Natural gas produced from wells located in the White River section, twenty miles from this place, is to be used for the manufacture of carbon black, it is stated. Eastern capital is financing the undertaking, according to report.

KANSAS—*Linwood*—A well estimated to have a capacity of 3,000,000 cubic feet was brought in on the Harbough farm, near this place, at a depth of 689 feet. It is said that the gas will be piped to Linwood and Bonner Springs.

KENTUCKY—The use of natural gas for the purpose of manufacturing carbon black has been prohibited in this State by act of Legislature.

Red Bush—It is reported that the Williams Oil, Coal & Gas Company is closing up its affairs for the purpose of dissolving the company.

LOUISIANA—*Monroe*—No. 2 well, drilled by the United Oil & Natural Gas Products Corporation in section 17-20n-5e, near Perryville, has been completed and is estimated to have a capacity of 18,000,00 cubic feet.

Morehouse Parish—The United Oil Company in No. 2 on the Harris tract, section 17-20-5c, is reported to have 24,000,000 cubic feet of dry gas at a depth of 2,211 feet.

Refugio—The Pratt-Hewitt Oil Company has completed a 20,000,000-foot gasser in its No. 1 well near Woodsboro, at a depth of 2,415 feet.

Webster Parish—Lloyd Harris and associates have completed a well in section 34-23-11, and report that it is good for 10,000,000 cubic feet at 2,695 feet.

MONTANA—*Missoula*—The Bitter Root Oil Company reports oil and gas in a well drilling south of this city, at a depth of 1,000 feet.

NEW YORK—*Chautauqua County*—The Dickinson Fancher Peek Company recently brought in a 12,000,000-foot gasser at Abbey, three miles south of Forestville. The same company also completed a 6,000,000-foot gasser in the same field several months ago, the production of which has been contracted for by the Iroquois Natural Gas Company.

Perry—The Pavilion Natural Gas Company, it is reported, has announced its intention to pipe gas from wells located at Danville, owned by the Newfield Gas & Oil Company, to connect with its line at Mount Morris, a distance of fifteen miles, thus enabling it to furnish Warsaw and Perry with natural gas service.

Try and be right as well as sincere. Haweis.

Columbus. According to figures compiled by Public Utilities Commission, the average rate of gas charged in the State is around \$1.00 per while the average rate charged for manufacture is \$2.27 per thousand.

Clinton. In the northeast quarter of section township, the Charters Oil Company has shot a test on the Robert Wolf farm. It is producing barrels a day. The well formerly was a gas well into the Clinton sand.

Crawford. It is reported that leases have been considerable acreage in Ripley and Fairland by C. L. Becker, a representative of the Putnam company.

De Kalb. The Keener Oil Company in its No. 2 has a good gasser on the Miller farm in Inde township. The gas was struck in the Maxon

County. In Liverpool township, the Ohio Fuel company in No. 2 on the George Harvey farm, is a light gasser.

De Kalb. The Ohio Fuel Supply Company reports gas on the Shepherd farm north of this place, some 30 in the Keener sand.

De Kalb. In Brush township, the F. L. Oil & Gas Company's second test on the Dorer reported a good gasser.

De Kalb. The Swingle Oil & Gas Company completed a good gasser on the Joseph Carleton

De Kalb. In Grandview township, Marietta a Matamoras interests completed a 1,000,000 cubic feet gas well on the Charles Brooks farm on Sheets Run.

De Kalb. In Brown township, the Ohio Fuel company drilled a light gas well in No. 2 on Ross 100 acres, section 27.

De Kalb. The Ohio Gas Company has a light gasser in the Workman lease and is drilling No. 2 on farm.

De Kalb. and others have a gas well with a capacity of 275,000 cubic feet in No. 1 on the Charles Lee 125 acres, section 4.

De Kalb. In Congress township, Brinkerhoff a light gas well in a test on the Winter 100 acres, section 24.

De Kalb. The Ohio Gas & Fuel company is reported to be using 500,000 cubic feet of gas per month through leakage. In granting permits to use gas, the State has instructed the company to use gas for heating and reports in its distribution to be waste.

De Kalb. The Western States Land & Development company in section 22-27-34, De Kalb, drilled a 14,000,000 cubic feet of gas at a depth of 2,400 feet. The gas well has been completed and is being drilled deeper for oil.

The production of the Schornwald No. 1 well drilled by the Western States Company, which was 10,000,000 cubic feet at a depth of 2,400 feet when it was brought in, shortly afterward dropped to 3,000,000 cubic feet. No. 2 well on the same lease came in at 19,000,000 cubic feet at a depth of 1,265 feet and dropped to 16,000,000.

No. 1 well of the same company in section 27-27-34 came in with 2,000,000 cubic feet and has dropped to 2,000,000 cubic feet production. This is at a depth of 1,265 feet.

No. 1 well of the Coast Oil & Gas Company, section 27-27-34, had an initial production of 2,000,000 cubic feet, dropping to between 7,000,000 and 8,000,000 cubic feet. No. 2 of the same company in this section dropped from 8,000,000 cubic feet to 6,000,000 cubic feet. This well was drilled to a depth of 2,400 feet.

Lawson. No. 2 well completed by the Victor Oil company in section 25-1-26 on the Cor farm is reported to be good for 60,000,000 cubic feet.

De Kalb. No. 1 Barnett of the Atlantic Oil Producing Company in section 34-11-11 has been completed at a depth of 3,000 feet and is reported good for 3,000,000 cubic feet.

The Atlantic Oil Producing Company has completed No. 1 Barnett, section 34-11-11, as a 10,000,000 cubic feet gasser.

De Kalb. Kimbly & Mee's No. 1 Bruner section 11-13-12 is a 15,000,000 cubic feet gasser from 2,000 feet.

In the Morris district, V. L. Reddy and others completed No. 1 Louisa, section 18-13-14, as a 3,000,000 cubic feet gasser from 2,650 feet.

The Ozark Drilling Company had 1,500,000 feet of gas in No. 2 Ida Smith, section 21-13-14, sand 600 feet.

West of Okmulgee, Kimbly and others No. 1 Preston section 11-13-12 is an 18,000,000 cubic feet gasser from 2,000 feet.

The Transcontinental Oil Company completed No. 1 Tiger, east of the Lyons pool in section 34-11-12, and the well is making 1,000,000 feet of gas from 3,450 feet.

De Kalb. No. 1 test of the Muskies West interests in the Eastman tract drilled to 2,000,000 cubic feet of gas at 815 feet. The gas was muddled and the well is drilling to the 2,100 feet sand.

Shelton. The Shelton Gas Company is reported to have entered into a five-year contract with the Ohio Gas Company for gas supply. In order to further improve its service, the Shelton Company is planning to construct a 4-inch gas line from the town to the main line and gas pressure.

PENNSYLVANIA. The Pennsylvania Oil & Gas Co. have completed a good gas well in the Pine Hollow field on the Foster tract.

De Kalb. In the West Virginia Oil & Gas Company, drilled in well No. 2 on the H. H. McNay farm and have a gasser.

Politeness is the art of choosing among one's real thoughts.—Stevens.

In the same township, the Scott Oil & Gas Company has started to drill a test on the Mary Scott farm.

In Alleppo township, the Finch Oil & Gas Company has completed a test on the George McVey. It is a gasser in the Gordon sand.

In Wayne township, the Peoples Natural Gas Company's test on the John Hask farm is a gasser in the Bayard sand. The same company's test on the J. T. Knight farm is a light gasser in the fifth sand.

The Pettit Oil & Gas Company has a gasser at a test on the John E. Pettit farm.

The Carnegie Natural Gas Company at a test on the Hester Stephenson farm, Cumberland township, reports a gasser estimated to have a capacity of 4,000,000 cubic feet per day.

TEXAS—Annona—A block of land has been leased in this section by the Riggins Oil & Gas Company of Comanche, Okla. The first test well is now drilling.

Carson County—A well of unusual production was recently completed by the Gulf Production Company in this section. If it is said that the well at 3,250 feet is producing 140,000,000 cubic feet, and that a still larger yield is possible. The flow is shut off and drilling to a lower depth is proceeding.

Dallas—According to report, the Lone Star Gas Company will install 30 additional gas compressors in the fields from which it derives its supply where the pressure is low.

Eastland—A gasser estimated at 2,500,000 cubic feet has been completed by the Middletown Texas Oil Company. The gas will be put through the absorption process for its gasoline content.

Fort Worth—The Humphreys Oil Company in its No. 1 test on the Cole tract, has developed a large flow of gas. The company is drilling several other wells in this field.

Marshall—The Industrial Gas Company has a large gasser in No. 1 in the Bethany Elysian gas field.

Panhandle—Local residents will shortly enjoy the conveniences of natural gas service, the Humble Oil & Refining Company having entered into an agreement with the city to this effect. The company will charge 40 cents per thousand for its product.

Paul's Valley—It is reported that M. M. Sweetman of Kansas City, Mo., has leased 50,000 acres of proved territory near Paul's Valley.

Pecos—Gas in commercial quantities has been developed in a drilling near the city, and it is expected that it will be piped to the city for domestic use in the near future.

WEST VIRGINIA—Boone County—On Alum fork of Boone creek, Union district, the Hope Natural Gas Company has a fair gasser in the Big Lime at a second test on the J. M. Boyce farm.

Calhoun County—In Sherman district, Park Bowser has a gasser good for 500,000 cubic feet a day in the Big Injun sand at a test on the E. B. Burrows farm.

Doddridge County—The Continental Oil & Gas Company completed a test on the John A. Davis farm, located in Greenbrier district. It is a gasser in the Gordon sand.

In West Union district, the Columbia Carbon Company's No. 42, Lewis Maxwell, is a gasser in the Big Injun good for 1,500,000 cubic feet.

Gilmer County—In Center district, the Hope Natural Gas Company's test on the I. N. Hardman farm is a gasser in the Maxon sand, good for 1,000,000 cubic feet a day.

The Hope Company has also completed a gasser on the Percy Arbuckle farm, and is drilling its second test on the J. D. Smith farm.

It is reported that the No. 7 well of the Hope Natural Gas Company on the Drusella Hardman farm is a gasser in the Maxon sand.

In Center district, J. A. Rusmisell and Company have completed a second test on the J. P. Norman farm. It is a gasser in the Maxon sand.

On Camp Fork of Horn creek, Troy district, the Hope Construction & Refining Company has completed a second test on the Allman-Hall farm. It is a gasser in the Maxon sand.

In Center district, the Hope Natural Gas Company's tests on the Charles Swisher and J. D. Smith farms are both gassers in the Maxon sand.

In the Troy district, the same company's test on the H. I. Allman farm is a gasser in the Maxon sand.

Kanawha County—On Mud Lick, Big Sandy district, the Peerless Carbon Company's No. 3 well on the Osborne heirs' tract is showing for 1,500,000 feet of gas in the Big Injun sand and a slight showing of oil in the Weir sand.

Lincoln County—In Carroll district, the Huntington Gas & Development Company has a Big Lime gasser at a test on the J. M. Nida farm.

Marion County—In PawPaw district the Randall Gas Company's test on the Thomas J. Floyd farm is a light gasser.

In the same district, the Owens Bottle & Machine Company has a gasser in the Big Injun and 50-foot sands at a test on the James Layman.

Monongalia County—In Clay district, the Hope Natural Gas Company's second test on the Stephens heirs' farm is a light gasser in the fifth sand.

Ritchie County—In Union district, the Carnegie Natural Gas Company's test on the Charles Ward farm is a gasser in the Big Injun sand.

In Union district, the Hope Natural Gas Company has completed tests on the L. A. Prunty, Amos L. Huff and J. H. Oldaker farms. All are gassers in the Big Injun sand.

In Murphy district, the Hope Natural Gas Company's test on the John Coyle farm is a gasser in the Big Injun sand.

Don't think of all the things money would buy—if you had it.

on district, the same company has a gasser in Injun sand at a test on the J. M. Boyce farm.

on district, on the Prunty heirs' farm, the Rural Gas Company has completed the No. 4 which is a gasser in the Big Injun sand.

on district, J. B. Yates & Company's test on the Miller farm is a gasser in the Big Injun sand.

same district, John Deem has a gasser in the same sand at a second test on his own farm.

on district, J. B. Yates & Company's test on the William Jewell farm is a light gasser in the Big Injun sand.

on district, the Hope Natural Gas Company's test on the Elizabeth farm is a gasser in the Berea grit.

on district, the Henselman Drilling Company's test on the Scott and John Satterfield farm has been 1 in the Injun sand and is a small gasser. This is located 240 feet northeast of production on the Apple farm in the Goose creek pool.

one creek, Union district, the Carnegie Natural Gas Company has a 7,000,000 foot gasser in the Big Injun sand.

County. The Wiser Oil Company has completed a gasser on the James Campbell farm, the gas is in the Big Injun sand.

County. A good gas well has been completed by the Quirk Oil Company on the J. A. Kelly farm in the Big Injun sand. This well is making 500,000 feet in eight sand.

MINN. - Watona County. In the Poison Spider field, the New York Oil Company is reported to have found a gasser estimated at 35,000,000 cubic feet.

ONT. - Calgary. In the Okotoks field, southwest of Calgary, Royalties Nos. 1 and 2, section 6-20-2-5 are producing gas to the Canadian Western Natural Gas Company with a production of 3,000,000 to 4,000,000 cubic feet a day. No. 3 is drilling. The gas is first used in the Royalties gasoline absorption plant and natural gas delivered to the pipe line under artificial pressure.

THE HIGH-TOP RANGE

Recently had a very interesting self-conducted tour through the plant of the Co-operative Stove Company of Cleveland, Ohio. The company's sales manager, Mr. K. D. Hutchinson, in speaking trumpet (metaphorically speaking) pointed from time to time the special features desired us to observe.

After we had finished our trip, Mr. Hutchinson was to be a bit more in view of the fact that the excellence throughout the plant and that were served in their new splendid line of gas ranges

were so many that it kept him almost constantly calling upon the services of his vocal cords.

A while since the Co-operative Company gave itself to the manufacturing of combination gas and coal ranges, and a very large line of coal stoves for both heating and cooking purposes. The company, however, did not build a full gas line either in efficiency, features, or fittings, like its present line, one that would have stopped a passerby without even a word from a representative.

Today things are very different, and Mr. K. D. Hutchinson, who was at one time sales manager for Rathbone, Sord & Company, and thus the possessor of an excellent knowledge of gas range construction as well as gas salesmanship, came over to the Co-operative Company, and with the help of other men, possessing years of experience especially factory practice, has developed a line that in design, features, workmanship and finish will surely cut a very prominent figure in the field.

These ranges, called "Grand," by trade-name, embody a heat control for the governing of the oven-heat during baking and roasting, one of the very latest features to be found on gas ranges, and likewise a height of cooking-top, measured from the floor, that is in line with the departure which is found in the "Vukan" ranges of Wm. M. Crane & Company, and which in turn is in line with the latest practice in kitchen sink installations whereby a higher measurement from the floor has become popular.

It will thus be seen that much that is "latest" is found on the "Grand" ranges, accompanied by a larger warming closet beneath the cooking top, the extra space being gained by the raising of the cooking top to the higher level.

In another article we referred to the fact that, "it is the appliance that sells the gas," and surely it that be so, then with the exceedingly perfect and beautifully designed and attractively finished gas appliances that have been standard upon the market, and with newer ones making themselves known, appliances so perfect and attractive as, for instance, this new line, there should be no question as to the ability of a gas man to continue to sell his product.

CONVENTION

Natural Gas Association of America

KANSAS CITY, MO

MAY 15, 16, 17, 18

HEADQUARTERS

Hotel Manhattan Hotel Baltimore
10th Street and Baltimore Ave.

Exhibitors and Sessions held in Convention Hall

Human life is more governed by fortune than by reason. Hume.

HOW TO ADVERTISE

A STORY is told of an Irish lawyer, who, being asked how he always managed to get a decision from a jury, replied, "I make 'em understand! —First I tell 'em what I'm going to tell 'em; then I tell 'em; and then over and over again I tell 'em what I told 'em."

In the foregoing lies one of the greatest elements in successful advertising, versus the intermittent type of publicity, wherein an advertiser "tells 'em what he is going to tell 'em," and then doesn't follow up this lead with conscientious, continuous telling. Or where the advertiser is of another type who simply abruptly "tells 'em" without any introductory matter leading up to his "telling 'em" and stops there, or he is of a third type which, concluding that he has told enough when he has once or twice or thrice told his story, stops, instead of continuing to tell it again and again, and many times again, each time couched in either changed phraseology, or change of contour of copy, or both, which changes help to both drive home and give spice to the telling of the old, old story in a way to make it new.

The way to advertise is the method of the Irish lawyer, first "tell 'em what you are going to tell 'em," then "tell 'em," and then many times "tell 'em what you told 'em."

This method applies to gas companies telling their story through the daily press to the community, or to the manufacturer telling his story to gas company buyers through the trade press. It's the correct principle in all advertising.

FARE \$5⁵⁰ DAILY BETWEEN CLEVELAND & BUFFALO



The Great Ship "SEEANDBEE"

The largest and most costly steamer on any inland water of the world. Sleeping accommodations for 1500 passengers.

"CITY OF ERIE" "CITY OF BUFFALO"

3 Magnificent Steamers

DAILY BETWEEN CLEVELAND AND BUFFALO

MAY 1st TO NOV. 15th

Leave Cleveland - 9:00 P. M. Leave Buffalo - 9:00 P. M.

Arrive Buffalo - 7:30 A. M. Arrive Cleveland - 7:30 A. M.

(EASTERN STANDARD TIME)

Connections at Buffalo for Niagara Falls and all Eastern and Canadian Points, and at Cleveland for Cedar Point, Put-in-Bay, Toledo, Detroit and all points West and Southwest. Railroad tickets reading between Cleveland and Buffalo are good for transportation on our steamers. Ask your ticket agent or tourist agency for tickets via C. & B. Line.

New Tourist Automobile Rate—\$10.00 Round Trip with 2 days return limit, for cars not exceeding 127 in. wheelbase.

Beautifully colored sectional puzzle chart of The Great Ship "SEEANDBEE" sent on receipt of five cents. Also ask for our 32-page pictorial and descriptive booklet free.

THE CLEVELAND & BUFFALO TRANSIT CO.
Cleveland, Ohio

THE MARTINIQUE



(Affiliated with Hotel McAlpin)

Broadway, 32nd and 33rd Streets
NEW YORK CITY

SITUATED IN CENTRE OF SHOPPING
DISTRICT - Adjacent to Theatre Section

Entrance from Hotel to New York Subway and Hudson Tubes affording direct communication with the Pennsylvania and Grand Central Stations, also general Post Office and Railroad Stations at Jersey City.

The Restaurants offer a truly McAlpin Service - with Club Breakfasts, Special Luncheons and Dinners, also a la Carte Service - - All at moderate prices.

600 ROOMS - PLEASANT ROOMS
FROM \$2.50 UP

FRANK E. JAGO - Resident Manager

PARK-AMERICAN HOTEL

ERNEST MCLEAN, MGR

KALAMAZOO .. MICHIGAN

EUROPEAN PLAN WITH BATH
\$1.00 AND UP \$1.50 TO \$2.50



TRANSLATIONS

ALL KINDS
ALL LANGUAGES

cal, Scientific, Catalogues, etc.

CONSULAR INVOICES, IN ALL LANGUAGES, MADE IN CONFORMITY WITH THE CUSTOMS REGULATIONS OF THE COUNTRY TO WHICH GOODS ARE SHIPPED.

POEY & COMPANY (Telephone 8948) 12 Water St., New York

Prompt service—Correct work—Moderate prices—
Strict privacy. Commercial, Mechanical, Techni-

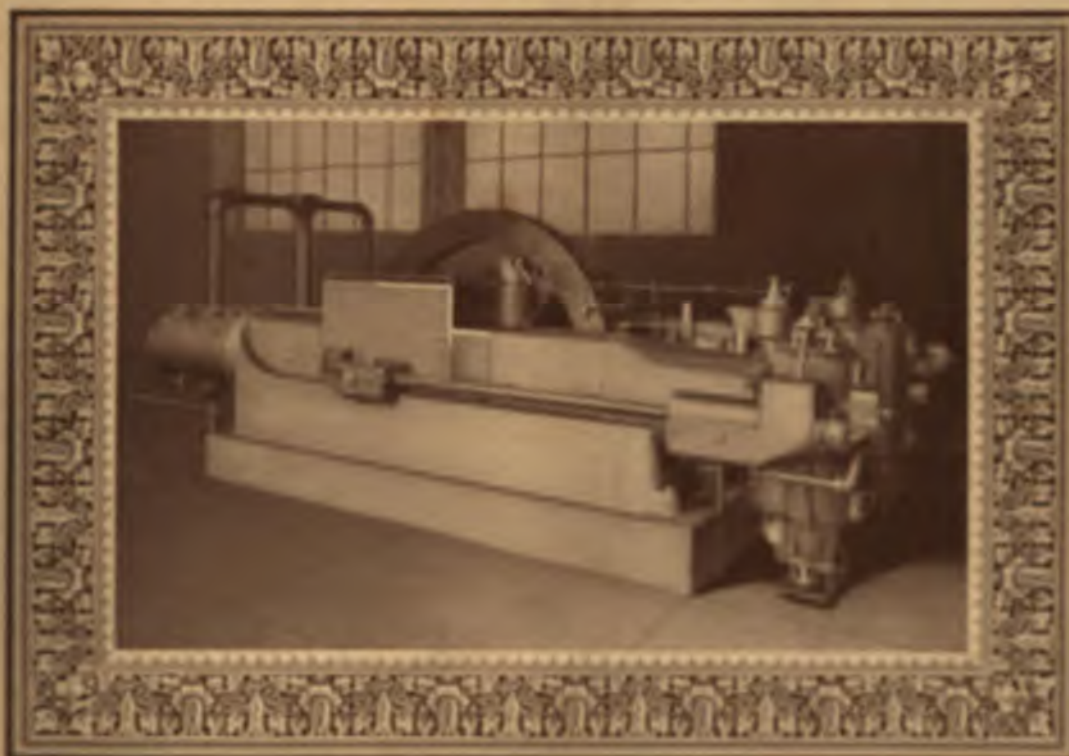
NATURAL GAS INDUSTRY

GASOLINE-PRODUCTION

TRANSPORTATION - DISTRIBUTION

MAY 1922

80 H. P. SINGLE OR 160 H. P. TWIN COOPER GAS ENGINES



SEE THIS COOPER ENGINE AT THE CONVENTION

It is designed especially for direct driving gas compressing cylinders and may be installed as an 80 H. P. Single Unit or two sides combined into a 160 H. P. Twin Unit.

THE C. & G. COOPER COMPANY, MOUNT VERNON, OHIO

40 CHURCH STREET
NEW YORK

422 GREAT SOUTHERN LIFE BUILDING
DALLAS, TEXAS

OLIVER BUILDING
PITTSBURGH, PA.

PUBLISHED BY THE PERIODICALS PUBLISHING COMPANY
Central Office and Publishing Plant, Buffalo, New York

GAS METERS

Meters for Gas, Water,
Air, Oil, Gasoline, Hydro-
gen, Oxygen, Acetylene
and Other Fluids.



Orifice Meters, Orifice Prov-
ers, Gas Meter Provers, Wa-
ter Meter Provers.

**Ironclad Cast Iron Dry Gas
Meter**—For domestic and small
industrial and commercial ser-
vices, using either Natural or
Artificial gas.



**Westinghouse Positive Fluid
Gas Meter**—For either high or
low pressure commercial or
industrial services using Natural
Gas, Artificial Gas or Air.



**Westinghouse Proportional Gas
Meter**—For large volumes of
Natural Gas, Casinghead Gas
and Air.

PITTSBURGH METER COMPANY

Company Member of American Gas Association

General Office and Works — EAST PITTSBURGH, PA.

SALES OFFICES :

NEW YORK — 50 Church St.
CHICAGO — 5 S. Wabash Ave.
KANSAS CITY — Mutual Bldg.

COLUMBIA, S. C. — 1433 Main St.
SEATTLE — 802 Madison Street
LOS ANGELES — Union Bank Bldg.



The Eshelman Belt Jack

The Eshelman Belt Jack is especially designed for bringing together the ends of belts, so that they may be quickly laced, hooked, or riveted.

It is indispensable in the oil fields, because it can also be used for moving heavy machinery and for tightening pull rods.

The track is 48" long and the clamps are 16". Centre pull gives even tension on the belt.

A belt can be installed or tightened in approximately 10 minutes. Requires only one man to operate.

Send for Bulletin No. 8, or inquire at any of our 80 Branch Stores.

"OILWELL"

Ever since the drilling of the first oil well, in 1859, the name "Oilwell" has identified the products of Oil Well Supply Co.—the world's largest manufacturers of oil well equipment.



Oil Well Supply Co.

PITTSBURGH, U. S. A.

NEW YORK
LOS ANGELES

SAN FRANCISCO
TAMPICO

LONDON

OILWELL SUPPLY CO

World's Largest Manufacturers of Oil Well Equipment

Co-Operation and Conservation

IT is impossible to accomplish general conservation in the gas field without co-operation; therefore we couple these two words as the Alpha and the Omega in the realm of this exceedingly necessary phase of the gas business in the United States.

There has been continuous waste from the well to utilization in the natural gas field, and there ever will continue to be, but with co-operation, conservation will surely increase to grow and waste to decrease.

A very important conference has just been held in Washington, D. C., at the Bureau of Mines. The assemblage was especially notable in view of the fact that in attendance were men representing many millions of capital invested in natural gas interests of the first magnitude.

These men came from the north-west, west, south-west and east, thus many types of conditions were described, explanations given and remedies told of and suggested.

It is hoped among other results that greater co-operation may be accomplished between oil interests and the interests represented by natural gas, for at present and in the past there has been in some of the fields a sad lack of that element.

Much stress for some time has been laid upon educating the public to be more careful in not wasting gas. Higher rates, advertising, addresses, leaflets, and what-not have been employed in the effort, yet while the waste of gas at the domestic appliance is a considerable factor, even a more vital one is waste in the field, on their own properties and on their lines, by gas and by oil companies.

Emphasis was placed at the conference upon the need for educating the field and all other employees, and some said, "*Ourselves*," (referring to the gas companies), in the *dollar-and-cents* value of the gas, and the vast money losses that even present waste runs into. Thus to influence against a continuance of waste beyond that which *cannot reasonably be prevented*.

At the conference it was freely stated that all the way up and down the line in gas companies, between gas companies, and also between gas and oil companies, there should be greater co-operation in order to accomplish major conservation. The Bureau of mines freely offered its co-operation and likewise the gas company management offered theirs. If all are sincere to the extent expressed great results are in the making.

There has long been notable co-operation through the Bureau of Mines under its recent director Dr. Van Manning, through the well directed efforts of Mr. Samuel S. Wyer of Columbus, Ohio, through the efforts of the Natural Gas Association, through individual gas companies' helpfulness, and through the columns of the NATURAL GAS INDUSTRY magazine and other media, all of which co-operation has been the means of laying the foundation work so vastly important upon which the proposed superstructure of gas conservation is to be built.

A full and complete report of the conference at Washington will be found on other pages in this issue.

Lucius S. Bigelow

MEMBERS OF ASSOCIATION OF NATURAL GAS SUPPLY MEN

ASSOCIATION OFFICES

905 Oliver Building, Pittsburgh, Pa.

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Economy Stove Co., Cleveland, O.
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Foxboro Co., The, Foxboro, Mass.

Frick & Lindsay Co., Pittsburgh.

Garlock Packing Co., Palmyra, N. Y.
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Gas Engineering & Const. Co., Pittsburgh.
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Humphrey Company, Kalamazoo, Mich.

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Jarecki Mfg. Co., Erie.
Jones & Laughlin Steel Co., Pittsburgh, Pa.
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Ludlow Valve Mfg. Co., Pittsburgh.
Lunkenheimer Company, Cincinnati, Ohio.

MacWhyte Co., Pittsburgh.
Manhattan Rubber Mfg. Co., Passaic, N. J.
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Metric Metal Works, Erie.
Minneapolis Heat Reg. Co., Minneapolis.
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Mueller H. Mfg. Co., Decatur, Ill.

National Supply Co., Pittsburgh.
National Transit Pump & Mach. Co., Oil City, Pa.
National Tube Co., Pittsburgh.
Natural Gas Industry, Buffalo.
New Bedford Cordage Co., New York City.
New York Belt'g & Pack'g Co., New York.
"1900" Washer Co., Binghamton, N. Y.
Northrup Equipment Co., Parkersburg, West Va.

Ohio State Stove Co., Columbus, O.
Oil & Gas Journal, Tulsa, Okla.
Oil City Boiler Wks., Oil City, Pa.
Oil Trade Journal, New York.

Oil Well Supply Co., Pittsburgh.
Oxweld Acetylene Co., Chicago.

Parkersburg Mach. Co., Parkersburg, W. Va.
Parkersburg Rig & Reel Co., Parkersburg, W. Va.
Peerless Heater Co., Pittsburgh.
Pennsylvania Furnace & Stove Co., Warren, Pa.
Petroleum Publishing Co., Tulsa, Okla.
Petroleum Supply Co., Steubenville, O.
Pittsburgh Meter Co., East Pittsburgh.
Pittsburgh Reinforced Brazing & Mach. Co., Pittsburgh.
Pittsburgh Supply Co., Pittsburgh.
Pittsburgh Valve & Fittings Co., Pittsburgh.
Pittsburgh Valve, F'd'y & Const. Co., Pittsburgh.
Pittsburgh Water Heater Co., Pittsburgh, Pa.
Plymouth Cordage Co., N. Plymouth, Mass.
Pratt & Cady Co., Inc., Hartford, Conn.
Precision Instrument Co., Newark, N. J.
Prichard Supply Co., Mannington, W. Va.

Rathbone, Sard & Co., Aurora, Ill.
Rathbun-Jones Eng. Co., Toledo.
Reid, Jos., Gas Engine Co., Oil City, Pa.
Rensselaer Valve Co., Pittsburgh, Pa.
Reliable Stove Co., Cleveland.
Republic Iron & Steel Co., Youngstown, O.
Republic Rubber Co., Youngstown, Ohio.
Republic Supply Co., Houston, Tex.
Reznor Mfg. Co., Mercer, Pa.
Riesenman Mfg. Co., Ltd., Franklin, Pa.
Robbins Publ. Co., New York.
Robinson Packer Co., Tulsa, Okla.
Roebbling, John A. Sons Co., Trenton, N. J.
Geo. D. Roper Corp., Rockford, Ill.
Rossendale-Reddaway Belt'g & Hose Co., Newark, N. J.
Ruud Mfg. Co., Pittsburgh.

Safety Gas Stove Lock Co., Nashville, Tenn.
Sands Mfg. Co., Cleveland.
Scott Gas Appl. Co., Washington, D. C.
Spang, Chalfant & Co., Pittsburgh.
Sprague Meter Co., Bridgeport, Conn.
Stacey Mfg. Co., Cincinnati.
Stitt Ignition Co., Columbus.
Stokes Deep Well Co., Shreveport, La.
Strause Gas Iron Co., Philadelphia.
Superior Tube Co., Kansas City, Mo.

Taylor, W. P. Co., Buffalo.
Toledo Pipe Thr'd'g Mach. Co., Toledo, O.

Union Rubber & Asbestos Co., Trenton, N. J.
United Seal Co., Columbus.
Upson-Walton Co., Cleveland, O.
U. S. Rubber Co., New York.

Walker & Pratt Mfg. Co., Boston, Mass.
Welsbach Co., Gloucester City, N. J.
Westcott Valve Co., Seneca Falls, N. Y.
Westinghouse Elec. & Mfg. Co., Pittsburgh.
Wheeling Steel Products Co., Wheeling, W. Va.
Williams Tool Co., Erie.
Witman & Co., Columbus.
Williamsport Wire Rope Co., Williamsport, Pa.
Worthington Pump & Mach. Corp., Buffalo.

Yorke Derrick Co., Washington, Pa.
Youngstown Sheet & Tube Co., Youngtown, O.
Young, Wm. T. Drilling Eng. Co., Oil City.

ANNUAL CONVENTION NATURAL GAS ASSOCIATION OF AMERICA
and EXHIBITION OF SUPPLY MEN'S ASSOCIATION
Kansas City, Kan., May 15 - 17, 1922

FROM THE EDITORIAL MAIL BAG

SLIDE RULE PRINCIPLE

CENTLY observing in an advertisement of Knutzel & Esser Company, of Hoboken, N. J., makers of slide rules, etc., an illustration of one, slide rule in hand, the thought came to us of this illustration to certain conditions in business.

We borrowed the illustration and are using it to show the thought that while the slide rule



principle is exceedingly valuable, in fact almost indispensable in certain lines of work and calculations, even the slide rule principle cannot be looked upon as all essential, or even desirable in order to arrive at certain types of determinations.

If a manufacturer were to calculate the strength of his institution by the number

of men on his payroll, this would be the slide rule principle. If, however, no thinking manufacturer, or efficiency engineer would for one moment thus calculate, he would do so the ultimate result, namely, comparison, would doubtless be exceedingly disappointing.

The real and true method of determining values, efficiency manufacturers must recognize this as being to determine the production qualifications of each piece of mechanism, of the lay-out, the plant, etc.

It would be an exceedingly incompetent manufacturer or efficiency engineer who would set down upon a sheet showing the number of employees, the number of machines, the number of shapers, the number of drill presses, the number of planers, etc., and the area of space of the manufacturing plant, and then say he has four hundred employees, and because he has this shop number two hundred, and because the space of the shop measures two acres, that the results must be thus and so.

A manufacturer or efficiency engineer who would measure has naturally taken the way of least resistance. He has not undertaken to find out those things which are important, but that require some time and attention, but simply on the slide rule principle said that two times three makes six, or twice four, etc., and therefore the results must be

In many institutions when it comes to the matter of advertising, the slide rule principle is in favor, and in some institutions with some advertising managers is considered the all important, while in other institutions the manager or his advertising manager have advertising as he would buy efficiency, having it not upon any other foundation than that.

Managers and advertising managers of this type realize that the spending of a company's money for advertising is not a thing to be gotten through with in the shortest possible time with or without a competent knowledge of conditions, but instead that all of the elements surrounding the publishing of advertising matter in magazines should be carefully and thoughtfully considered and looked into.

The expression that is frequently heard from men handling advertising is "Well, that's out of the way."

As though advertising were not an exceedingly important means to that all important end, namely, the selling of the product. The old expression "Money makes the mare go" is just as true today as when it was first spoken, and while much money can be made or lost in the works the great stream that feeds the ever-demanding treasury finds its source in the sales side of the business.

It being therefore the case that the sales side is all important, and it also being the case that the type of salesman and the selecting of salesmen of an institution are believed to be features of vital importance, and to which much time and thought is given, so likewise the employing of the publicity medium should be just as carefully and just as thoughtfully considered, for it is like the salesman, is one of the cogs in the great wheel that turning out sales keeps the factory in motion.

If we were buying advertising, and there were only two or three magazines in a field, even though we were intending to cover half a dozen fields that might total eighteen or twenty publications, we would never determine upon our advertising policy by the slide rule principle. We would never in other words take somebody else's say as our judge of efficiency, or thought, or interest statement on the slide rule principle, even though we were to give attention to such statement, but let us we spent our money, if we were the advertiser, or let us we spent the advertiser's money, if we were an advertising manager or a general manager, we would bring a line to every publisher in the field we desire to cover, and we should say "We want to know your firm's statement regarding the standing of your magazine in the field in which you publish, the number of years you have been publishing, the average circulation per year during say, one or two years past, the number of ads that appeared upon the books. We would ask what the percentage of display advertisers is that is one of the field, what our particular line is designed to reach as compared with

It's the ability a man uses, not the ability he possesses, that regulates his reward

the percentage of display advertising applicable to some other section of the field that we would not care to reach. We would ask for a list of the articles appearing in the reading pages indicating the percentage applicable to that division of the field which we would wish to reach as compared with articles designed to supply information to some other division of the field that we did not care to reach. We should ask, how many columns or parts of columns these various articles occupy in order to determine the area of reading matter applicable to our division of the field."

As one of the essentials we should ask, "What especially notable work has your magazine done in the field," adding specifically, "recite any such." Also making it a point to ask the question, "How long has the present ownership published the magazine, and how long has your magazine editorship been intimately in touch with the field, and has your publisher an intimate acquaintance throughout the field of such nature as would lead the readers to have confidence in the publication and its policies."

The foregoing are some of the questions we would ask, thus avoiding the "snapshot," "make-it-snappy," "let's get rid of this job", in other words, the slide rule principle, which should never be employed in the buying of anything, whether it be material, supplies, or advertising. In other words, the same principles should be employed as are employed where consistent means are in vogue looking to the employment of men. In other words, not the slide rule principle of mere calculation, but the principle of past showings, of present ability, of integrity, of earnestness of purpose, and of ability to make the earnestness of purpose an actual factor in accomplishing the end in view.

The slide rule is a wonderful estimator, but no one would buy services or quality in material, etc., by the slide rule. Why then adopt the slide rule principle in buying advertising? Instead employ those who have time enough to handle your advertising as it should be handled, and with that same degree of attention to the features of larger moment, even though it take time to arrive at conclusions rather than to quickly arrive at a determination by slide rule method.

THE best anodyne is work. You can always find some around your immediate vicinity; it is cheap, plentiful and efficacious. It is hard to understand why so many people are afraid to try it.

N. G. A. OF A. AT KANSAS CITY, MAY 15-17

THOSE two splendid caravansaries in Kansas City, the Baltimore and the Muehlebach, have naturally been chosen as headquarters of many of the leading gas men, though the convention sessions will be held in Convention Hall where the exhibits will be located. The two hotels indicated as notable leaders are immediately opposite one another, and it will be found equally convenient by those wishing to be at "headquarters" to lodge in one or the other hostelrys. The rates for rooms in these hotels are as follows:

\$2.50 to \$3.50, single, without bath.
\$4.00 to \$5.00, double, without bath.
\$3.50 to \$9.00, single, with bath.
\$5.00 to \$12.00, double, with bath.
\$7.00 to \$10.00, rooms with twin beds.

However, even though headquarters will be represented by the capacities of two, not merely one hotel, the making of reservations should not be delayed, as naturally, though there are other Kansas City hotels available, the great majority will prefer to be at the Muehlebach or the Baltimore.

PROTECTION AND CONSERVATION.

A CERTAIN bill has passed both houses in the state of Kentucky and after passage it went forward to the governor for his action. It was bill 206 entitled, "An act for the protection and conservation of the supply of natural gas in the state of Kentucky, and wasteful use of such gas and the providing of penalties for the violation of such acts."

We are informed by our correspondent that the Louisville Gas & Electric Co. is accredited with being the sponsor of this bill which does not meet with the approval of a lot of oil men and others. These men claim to see in it, so called monopoly covering the product that the Louisville Gas & Electric Co. is said to depend upon, since the company draws a large part of its supply of natural gas from the fields in eastern Kentucky, gas that it sells to consumers in Louisville.

It is stated that according to the provisions of the bill, operators are prohibited from selling their gas except to a utility company from wells within a radius of ten miles of a pipe line.

Operators declare, as we have already quoted, that the bill is aimed at forming a monopoly and that it destroys an open market for their product. Officials of the Kentucky Oil Men's Association are accredited with the statement that if the measure becomes a law, it will retard the development of both gas and oil fields of the state of Kentucky. No doubt the Louisville company would point out quite the reverse.

Trying to find a short road to success would make good epitaphs for the vast multitudes of failure.

COOPERATION THE KEYNOTE

Following well indicates the attitude of the government as displayed at the conservation conference recently held in Washington, between the United States Bureau of Mines, the National Gas Association of America, producers, distributors of the Mid-Continent and eastern others interested in the subject of conserva-

tion and products representation to Washington in response to an invitation by the Bureau of Mines with a view to establishing cooperation between the natural gas and the Federal Government whereby to among two million five hundred thousand to consumers a greater economical use of it.

Conference Secretary Hall promised the cooperation in all respects of the Department.

Secretary in his address stated:

"It is the duty of the government to go just as far as assisting our industries and certainly it is the duty of the Department of the Interior as I understand it to help you in developing the natural gas industry. We do not want the government in competition of its business men. The government is in the oil and gas to some extent, but we endeavor to conduct it so as not to compete with, but to assist those in the development of the industry."

At a natural gas conservation meeting called by the late Secretary Franklin K. Lane, the gas companies have been demonstrating to the proper methods of using gas in application, particularly have emphasized the use of it under lower pressures.

"Natural gas companies have been making extraordinary efforts to reduce leakage and secure the results possible from the gas used for their various purposes and in this way considerable quantities of gas have been conserved," W. B. Way, of the association, said. "The consumers have brought to their attention the folly of inefficient fixtures and the necessity of only those fixtures which will show reasonable results. Many cities also have conserved higher rates for gas in this way bringing their citizens that gas is worth saving and in effect, notwithstanding the higher rates, they have been able to get as good results for the same period of time as under lower rates."

A conservation committee of the association will be devised means of reducing the huge quantities of natural gas which are allowed to escape from oil wells and a second committee will

plan to disseminate information showing how maximum results may be produced from the use of the gas. The Bureau of Mines will cooperate closely in this work.

Members of the association who attended the conference are: W. B. Way, E. J. Egan, H. A. Quay, S. W. Meale, G. F. Batchelor, John B. Corrin, J. F. McKirdy, T. B. Gregory, I. B. Tonkin, Alfred Hurlburt and L. B. Denning, president of the association all of Pittsburgh, Pa.; Raymond Cross and W. O. Walker, of Oil City, Pa.; J. D. Creveling and Christy Payne, of New York; Charles Owen, Caney, Kans.; H. R. Davis, Buffalo, N. Y.; S. S. Allen, Jr., Columbus, Ohio; J. H. Maxon, Chicago, Ill.; Karl F. Griffith and F. I. Chase, of Dallas, Texas; F. R. Curtin, Jr., of Lima, Ohio; W. W. Freeman and H. J. Hoover, of Cincinnati, Ohio; John J. McMahon, of Cleveland, Ohio; R. K. Tallant, of Fairmont, West Virginia; J. W. Dana, of Kansas City, Mo., and representation of the Natural Gas Industry magazine.

GASOLINE LOSSES BY EVAPORATION

A BULLETIN upon the evaporation loss of petroleum in the Mid-Continent field, by J. H. Wiggins, petroleum engineer, has just been published by the United States Bureau of Mines. It contains facts of much interest, for a detailed field investigation has shown that in one stage only of handling crude oil the volume of gasoline that evaporates is equal to one thirtieth of the country's yearly gasoline production, says the author. This loss occurs during the few days that the oil is stored on the leases before being taken by the pipeline, and in one year in the Mid-Continent field alone, it amounted to 122,100,000 gallons. Large as it is, it is only a part of the loss on the lease.

Investigation has further shown that the gasoline in crude oil evaporates from one half to six tenths as rapidly as the same gasoline after being distilled and stored, all evaporative results being the same.

Many wastes in the oil fields are called necessary. By this is meant that the cost of preventing the waste is greater than the gain through saving. Evaporation losses have fallen heretofore in this category, but now they must be considered unnecessary. In other words, it is no longer economical for any handler of crude oil to permit losses through evaporation.

In accordance with its purpose of seeking to conserve mineral resources, the Bureau of Mines investigated the loss of gasoline by evaporation in the storage and handling of petroleum. Inasmuch as most producers had not decided that their losses justified corrective measures and no evidence was available in the comparative losses at various stages of handling the oil, the investigation was limited to determining by experiment and observation the nature and magni-

Health does not come by the most diligent saving, but by the most diligent producing

tude of evaporation losses, where the greatest losses are, and the factor controlling evaporation.

The results of the investigation, as presented in this report, indicate that losses from evaporation are so large that they should receive serious consideration at once by the industry, which should make every endeavor to reduce them to a minimum. The Bureau of Mines is now making a supplementary study of methods of reducing these losses. The complete text of the finding may be had of the Bureau of Mines at Washington, D. C.

DEATH OF H. D. HILDEBRAND

MR. H. D. HILDEBRAND, President of the Hope Engineering & Supply Company, Mt. Vernon, Ohio, Pittsburgh and Tulsa, Okla., died Saturday, April 8, in the Johns-Hopkins Hospital, Baltimore. He was born in Wilmington, Delaware, and came to Pittsburgh in 1889.

He formerly was connected with the Hall Steam Pump Company and became associated with the Hope Engineering and Supply Company when it was organized in 1906.

Mr. Hildebrand was President as well of the associated corporations, The Hammon Coupler Company and the Hope Forge & Machine Company, Mt. Vernon. He was a member of the Natural Gas Association of America and the Natural Gas Supply Men's Association, the Engineers' Association of Western Pennsylvania and the American Society of Mechanical Engineers. The deceased was considered one of the best engineers in gas and air compression in the United States. He leaves his widow, Mrs. Zaidee S. Hildebrand of Mt. Vernon, and three sisters at Wilmington, Del.

Our personal touch with Mr. Hildebrand led us to esteem him highly indeed and it is with deep sorrow that we recount his death. He will be sadly missed in the industry.

REFINERY FACTS FOR FEBRUARY

THE 296 operative refineries in the United States ran a daily average of 1,361,000 barrels of oil through their stills during the month of February; this being 76% of their rated daily average capacity. The daily average run for the 291 plants in operation during February, 1921, was 1,340,000 barrels; an average daily increase of 21,000 barrels run to the stills is shown over February a year ago; so it appears from government statistics.

An increase of four plants in the number operating and a daily average increase of 42,000 barrels in capacity is shown in the totals for the month just closed.

Gasoline stocks total 818,500,000 gallons and show an increase of 112,800,000 gallons over the reserve the

last of January. This is the greatest reserve in the history of the industry, topping by 18,000,000 gallons the previous high figure set in May, 1921. At the present rate of increase in storage it is possible that the billion gallon point may be reached in the gasoline reserve before the seasonal decline in stocks commences. The amount now in storage is 138,000,000 gallons more than on March 1 a year ago. Production during February totals 46,000,000 gallons less than for January but shows a 10,000,000 gallon increase over February a year ago.

HEAT TREATMENT OF ROCK DRILL STEELS

THE American Petroleum Institute through its Division of Research is co-operating on an Advisory Board to the U. S. Bureau of Mines and the U. S. Bureau of Standards in "the investigation of the breakage and heat treatment of rock drill steels and other steels and alloys subjected to similar impact stresses." The Advisory Board is composed of members of the following societies:

- American Society of Civil Engineers.
- American Society of Mechanical Engineers.
- American Society for Steel Treating.
- American Society for Testing Materials.
- Associated General Contractors of America.
- American Institute of Mining and Metallurgical Engineers.
- American Welding Society.
- Engineering Foundation.
- National Research Council.

It was agreed at the meeting of this board on February 20, that a field survey should be immediately begun under the joint direction of the U. S. Bureau of Mines and the U. S. Bureau of Standards, the object of which is to prepare a report on the present practice in this country regarding the heat treatment of drill steels and the extent to which breakage occurs. Further action of the board will be based upon the report of this survey, work on which has already been started.

CONVENTION

Natural Gas Association of America

KANSAS CITY, MO.

MAY 15, 16, 17, 18

Hotel Muehlebach - Hotel Baltimore
12th Street and Baltimore Ave.

Exhibition and Sessions held in Convention Hall

"Service" is the secret of successful salesmanship

Big Gas Interests

Heads of Gas Interests Representing Millions of Invested Capital Tell of Their Methods at a Conference With the Chief of the Bureau of Mines

FOR recent date H. Foster Ham, Director of the Bureau of Mines, Department of the Interior, invited heads of extensive gas interests and representation from the Natural Gas Association of America to a conference he had planned with a view to continuing the good work of gas in that his predecessors, Hon. Franklin K. Roosevelt, Secretary of the Interior, and Dr. Van Manning, Chief of the Bureau of Mines, had inaugurated rather with a view of expanding that work in unity presented or as opportunity could be given. Mr. Ham is a progressive man, not simply following type, but of the creative class of men.

The conference was held in Washington, at the White House, and in his opening address, Director Ham for his Bureau: "I hope that you will look at people who are trying to help rather than those who are trying to regulate."

The country has passed through a period of war, but such has been repealed, and the government steps back to its normal position. Federal police power, whatsoever, such now in the hands of the states.

The federal government can do nothing and does not do anything in matters like this except to help. On the other hand, the Federal government in a certain sense has gotten into business.

The lands of the West which were formerly now leased and the oil and gas lands are under lease, so that the Department of the Interior acts as trustee for the land owner in the operation of gas wells, oil wells and coal fields on those lands. The actual control of that work is this Bureau, and we are now in a position where we might call consulting engineers, or representatives of the management on behalf of the land owner, a considerable amount of gas and oil work is perhaps a new point of view, and a more.

It has given us some very real and definite.

We have to consider the price of gas now from the same point of view that you do. That is to get down to what is the fair price. We take serious thought of our recommendation be natural gas gasoline be taken out of the possibly can be taken out. A good deal of what comes off the government lands is rich in as gasoline and in efforts to conserve that.

we have to take serious thought of the effect that it has on the lessees in the matter of building plants. We have had the finest cooperation in that particular. The Midwest Company in the Wyoming fields is building a valuable plant and we hope to make a good saving out of that. The waste of gas is continual. It lasts from the very beginning of drilling in a field until the gas is finally burned in the cook stove. All along the line there are chances of waste.

In the limited time I have been with the Bureau my contact has been more with the field, particularly in the West where, and I think probably those of you who work in the West will agree with me, your methods have not reached the high standard that I understand they have in the eastern gas fields, and, frankly, I have been appalled at the waste in the field in the process of drilling and all around through the field. The largest parts of the waste I have seen has come from the oil men who are not particularly interested in gas. At the same time it is gas, and it is gas which in a good many cases might be used, and perhaps by working together we can get better results at the very beginning. Beyond that, when it comes to general education of the public, that is something that you must keep on doing. We can never say that the public has been adequately educated. We will have to do it over and over.

Away back fifty years ago they taught arithmetic in the public schools, but they still have to teach it. I took it in the schools, but when my children come along they will have to teach them. You will have to go and teach new groups of customers in the right way to use gas and the least wasteful way to use it."

Mr. Ham continued:

Mr. Harry L. Brown, president of the American Gas Association, said:

As far as the business side of the gas industry is concerned, our situation has been somewhat similar to other companies distributing natural gas. We have done some work in education of the public as to lines of proper utilization. In the last few years we have looked pretty carefully at a company after the consumer's installation work. I think that conditions are very good there as a whole. We held off new active work last year for the very reason that we were about to meet a rate making situation and, as we all know,

what you have to do so well that the Boss won't have to do it over again—The Lamp

the public mind does not go along very much with stories of proper utilization, or conservation, when your company is about to ask for higher rates.

"Our plans for the purpose of utilization are going along about as follows: We are having inspections made. How far those inspections will go will depend on the results that we are getting. Ultimately it may mean the inspection of all of our 125,000 to 130,000 customers, their appliances, etc. We are with the Department of Education, preparing a definite campaign for the public schools to include the placing of a teacher demonstrator—through whom with the co-operation of the school authorities, we believe that we shall have found a place for good educational work.

We haven't tried to deceive ourselves into the belief that good utilization, or the saving of gas, is going to be found through the cookstove burner alone. That is a small feature of it. There are so many more wasteful uses of gas in the home and in the factory that the utilization of gas on the range is a very small matter. However, we are not overlooking anything, and we expect to carry our efforts into the shops and the factories, looking toward better utilization of gas there.

To get away from the local situation, the Publicity Committee of the Natural Gas Association has been discussing informally, as we have met together, plans for better publicity through the efforts of the Association itself in the future, and we hope that we will have the co-operation of the Bureau of Mines in Washington. I might say that at the Kansas City convention there will be definite plans suggested for better publicity work and cooperative work between the industry reached by the Gas Association and the properly constituted authorities of the Federal Government in the Bureau of Mines, if such work can be properly dove-tailed, and I think it can."

Mr. J. D. Creveling

Mr. J. D. Creveling of the Henry L. Doherty Company, speaking of western conditions, said: "The western situation is that of a *control problem*." He then, referring to a statement the Director had made in his remarks, touching upon the situation in the west as compared with that in the east, said, "Gas in the west developed originally more as an incidental problem than that in the eastern fields and, therefore, did not get the original attention that the gas problem in the eastern fields received. I know in some of our distribution system, viz., systems now having several thousand meters, they originally started out with a short stretch of two-inch pipe on top of the ground, and we kept adding to those systems until we have built up now a distributing system in a town of some size. You would not expect to find the same conditions in those systems as you would find in a well laid out distribution plant. We are, however, putting on a systematic survey of all of our distribution plants and are aiming to spend in repairs an amount of money in each of these plants that we figure the times and the income from the business will warrant. We are not combing with a fine tooth comb—the comb

we are using is rather coarse. However, we expect to keep combing from year to year as long as we are in the business, and every time we expect to be able to use a finer tooth comb than heretofore.

We have confidence in our ability as time goes by to convince the public that the protection that they are buying is worth money and that we can really afford to conserve. We don't expect any business enterprise to spend money beyond a certain limit to save something that is not worth anything.

We have problems beyond that of the distributor. We have problems all the way from the mouth of the well to the consumer. There was at one time a very large waste in the Mid Continent gas fields, largely brought about by oil operators.

The regulations of the Federal Government, especially on the Indian lands in the Osage Nation, have done two things. First, those regulations have been strict enough that waste there as they used to waste, for instance, in the old Cushing Field is impossible.

The other thing that has been done, which I believe is even more far reaching, is to *open the eyes of the industry* to the fact that they had been wasting large amounts of gas. The industry has benefited through education, through knowledge of what has been done in the Osage.

Of course, every one of our main pipe lines is walked very frequently and the main leaks repaired. As a matter of fact, all leaks are repaired. At the present time, we are putting fire tests on our main pipe lines to see if we can't reduce the leakage.

Some of the gas in the mid-continent has been much richer in gasoline content than the gas in some of the eastern fields. The old type rubber gasket was used originally in the main lines and, of course, all know the effect of gasoline on such.

On all of our new lines we are taking care of these by using a different type of gasket which the gas will not attack, but I would say that from the field to the consumer, while our problem is not solved by any means and we don't expect it ever to be wholly solved, we are making progress, but the progress we make must depend, in part at least, upon the value of the commodity which we are saving.

Mr. H. A. Quay

As representing one of the very large gas interests, the Manufacturers Light & Heat Company, Mr. Quay said:

My company has devoted the larger portion of its efforts to the conditions over which the company has direct control. Like all of the larger companies, we have maintained, for years, a system of line walking, both in the field and on city plants. We have men constantly patrolling our main lines. In city plants we have at least three inspections each year in which every manhole, opening in the street, etc., that can be opened, is examined for leakage.

Nature yields only to work

Remember that the misfortunes hardest to bear are those which never come—Lowell

but every man we have working for us in the field is considered an inspector. If he sees a leak he is supposed to report it. We have eliminated a great deal of our leakage, though I don't think we will ever eliminate all of it. It is a question of follow-up all the time. You have to keep after leaks continuously. We have meters on every free consumer. In the past we have had probably twenty-five hundred free consumers. They used as much as fifteen thousand pay consumers—they wasted that much.

We have now put meters on every one of those free consumers. We have no free consumers now except those specified by a lease. Nearly all of them would rather get gas from a line than from a well. When they get gas from a line they are under contract to limit the amount of gas they use. In addition to that, we have sent out a great many letters to show where they were wasting, these have had a great effect; we have probably cut down the amount of free gas one-half.

We have offered four or five prizes to the consumer who saves the greatest amount of gas and, so far that has shown a great effect. Eventually, we are going to get all consumers on the same basis as are pay consumers.

We have installed the most efficient appliances, have used low pressure gas under all of our own boilers and have tried to get other people to do the same.

Mr. J. J. McMahon.

Mr. J. J. McMahon of the East Ohio Gas Company, told of methods in vogue with those interests, as follows:

During the past few years we have done considerable advertising along conservation lines, and we have followed that up by having a department of conservation. We have women who are demonstrators in our office. I presume we have had 150 or 175 people who have called and seen these demonstrations. I think these demonstrations do more good, perhaps, than inspections.

We have found that where we made inspections that the consumer either does not understand or does not care, and doesn't pay much attention to what has been told him. When they come into the office, more time can, naturally, be given them. They see the reasons, are told the right way to use gas and are well impressed.

We have carried on a campaign among the schools and find there that we have done a great deal of good. The children become interested and tell their parents. This is especially true among foreigners, because the foreign father or mother not understanding English, does not pay much attention to an inspector, but when a boy or girl gives them the message they pay attention to it.

As far as the transmission lines are concerned, for a number of years we have been paying a great deal of attention to them. We have re-rubbed several sections of trunk lines. As to free consumers, we have very few, and today we limit the farmer to so many

feet per month. If he uses an excess of that he has to pay the current rate. Instead of flambeau lights, just now we are using electric lights.

Mr. Bain: I understand there has been some difference of opinion with regard to the use of the old-fashioned gas stove and the artificial gas stove.

Mr. Corrin: We have used mostly the artificial; that is, open top and raised burner and in our demonstrations have showed what the raised burner can do. I think the raised burner should be used entirely.

Mr. F. L. Chase.

In his remarks, Mr. F. L. Chase of the Lone Star Gas Company, said: The gas problem in the mid-continent and western field, as has been said, is, I think, entirely different from the problem in the East. I think I am safe in saying that there is going into the air today in the states of Texas and Oklahoma an amount of gas that would supply nearly all the requirements of the entire states of Ohio, Pennsylvania and West Virginia. That is, however, something over which the gas companies have no control.

Our problem there is closely allied with the oil problem. There is hardly a field where gas is found that oil is not also found. The problem, therefore, becomes one that is extremely intricate and difficult to solve. The Lone Star Company, as soon as it gets possession of gas, takes every possible means to conserve it.

Perhaps on main transportation lines the same detailed care is not being taken to prevent waste that is taken in distributing plants, though with respect to the Lone Star Company, that statement does not hold good. In the first place, one of our rules is that no foot of gas shall enter our lines except it is measured. We have our main line divided into sections. I think we have something like forty or fifty sections. Every section is measured and our main lines have orifice meters along them.

When we instituted that system we began to work on the sections that showed the largest loss and made general improvements in those. After the improvements progressed, we began going over the same thing until, in the year 1920, our entire loss on all of our main lines was less than 5 per cent.

In 1921 it was a little more than 5 per cent. for the reason that we carried a great deal larger pressure. We patrol our lines and have gotten to the point now where we can take individual sections and improve them.

We go over a section, maybe thirty or forty miles long, and we burn that section at every joint and make note of every leak that was found and then start repair men over it so as to repair every leak.

We have a system of line walkers—patrolmen; they report daily. We have a telephone line over the entire system and these men are supposed to report every leak daily.

We have another problem there that is beyond our control, and which we are trying to remedy. We have still a number of percentage contracts where the pipe line company stands the loss by all the distributing plants

It's not hard work that breaks men down—it's worry.—The Ambassador

now of no scheme that could be devised that encourage loss of gas more than such a form of

However, the distributing companies are now something towards remedying the leaks.

have stated that gas is being found throughout part of southern Oklahoma and Texas, where get fifty to one hundred foot wells, and that frequently found, too, and that a great part of any's gas must, of necessity, come from the oil

maker also said it would be absolutely impossible to have a market for all the gas produced, and that market could be found for only a small per- cent of the gas from a well, but that this condition has been found since the great oil development

public," said Mr. Chase, "seemed to believe it is company's duty to furnish a market for the gas, and that when the public gets the pipe line they think more of the great quantity of gas, the rates are lowered

companies would go broke," said the speaker, "tried to follow the gas development with pipe lines here were billions of feet of gas going into the

because there is no market for it." Said he, "if we had a market the entire product from the wells would go to the public, on the other hand, on account of the great quantity of gas, think our charges are unreasonable. They realize the conditions, they can not, they know about the business.

simply outlining some of the problems the gas industry has no control over.

Mr. A. R. Cattell

A. R. Cattell, natural gas engineer of the Bureau of Mines, who has had detailed to him the work of making transmission gas losses, means of testing for leaks, and to determine final remedy, said

and know that it is important to determine just what the leakage is, the important thing is to determine how much is reduced and what proportion of the leakage is due to it is economically feasible and practical to reduce. This statement met general approval here present. Mr. Cattell also said, "Too much laid on percentage leakage which is not an in- crease in the efforts the companies are putting forth to reduce leakage."

Mr. Alfred Hurlbutt

Alfred Hurlbutt, who is general manager of the Tulsa Company, had the following to say

question of the saving of gas, as Mr. Cattell is economic one purely and the Bureau of Mines is a great deal to help the industry in bringing it to the fore. I think that the first outcome has been a great deal of education amongst our men and boys. It has made us all go down the line and see the value of this gas upon our employees. matter, however, is always one of determining how much money can be saved by the money expended

If we do not so figure, we find we get in the red and are unable to get the money to go on with the work.

"There is no doubt that the increase in the price of gas that has occurred, I think in practically all fields, has had a very beneficial effect on the amount of gas that has been saved. Manufacturers have been very much more careful in the use of gas within the past few years than they formerly were. They have got to make gas compete with other fuels. They have seen their way in many industries.

"We have ourselves established a department to call upon manufacturers using gas, and instruct and lend all possible aid in the use of appliances. These appliances are as nearly perfect as we can get them. We have also done a great deal of advertising to our consumers, informing them of the proper method of using gas in the household.

"We have, in Pittsburgh, some five different offices in which we maintain demonstrations, we are trying to get people to come to these offices, for when they do visit them, their interest is at once aroused and they will return with a purpose to follow instructions.

"When we advertise and send out men, house to house, before the people have become interested, frequently they pay little or no attention to the work we do at the home. If, however, we can get them to come to our show rooms and see for themselves, they at once become interested.

"In the household it is the question of the pocketbook and if what we there tell them does not in some way touch the woman's pocketbook she is not going to give very much attention to it.

"We have gotten our men much more impressed with the value of the gas, and, as the price in the various fields has gone up it has made a very decided difference in their attitude.

"I think, as Director Bain said, we have got to keep on educating, keep on talking to our men, and that the education in the family has been most beneficial.

"One representative stated that his company used to give a great deal of free gas in payment for right of way, but that in the past few years, by order of the state commission, they have no right to give gas away as payment for service, but must give definite payment for such service. It has been surprising the quantity of gas that has been saved by that law. The difference between the quantity of gas now used at the regular rates under such conditions and what was burned under free gas is very surprising.

Mr. J. H. Dana

Next followed Mr. J. H. Dana of the Kansas City Gas Company, who said

"As several have intimated, this question of conservation is all a question of economics. The war prices for food stuffs engendered all the garbage and in the United States so much so that the town leader pig pen all went out of business. After the same manner, the low price of gas has been the cause of its frightful waste in America. The failure of the producers of the gas is

Every pessimist totes the world on his shoulders—Kaufman

the field, the failure of the transporter of it, the failure of the distributor of it, and the failure of the rate-making bodies and the public to realize its worth is what caused the terrific waste.

"When the gas was bought in Oklahoma at from one to one and one-half cents a thousand and carried to Kansas City some three hundred miles and sold to the ultimate consumer, there was no conservation of gas. The result was shortages and bad service. For many years the same thing has been experienced, more or less, in other fields.

"When we finally got the rates up to about half what the gas was worth there was considerable effort to conserve the product. The producer in the field was paid enough so he could afford to conserve gas, and the Kansas City Gas Co. and other companies can now afford to spend some money, also, to conserve the gas.

"What we have actually been doing is practically everything that has been suggested here. We have been carrying on demonstrations in our offices to show the consumers how to conserve gas and we have been working through the schools. We have sent out literature showing how to conserve gas and have sent speakers to various town meetings.

"We think we have effected a very large measure of conservation in the homes, and have aroused much interest by showing how conservation touches the pocket-book. Consumers are generally willing to do the proper thing when this is brought to their attention.

"The company, itself, has instituted and maintained a very efficient inspection system such as has been suggested here, but in addition to that, under suggestion or requirements of the Kansas Commission, we have gone into a very extensive and effective leak survey. I mean by that not merely an inspection, but a blocking off of the town into sections and putting the line under pressure, cutting off all service, turning off all the house appliances, and testing the system to see how much leakage there is in the main.

"We found that one can very easily spend more money for such testing work than the saving is worth. I cannot recall the figures, but I know we expended, in many cases, far beyond any possible return or saving on the expenditure. We did it to demonstrate, to actually determine for ourselves what can be done.

"While we intend to go ahead and make a complete physical survey, block by block at a time, in both cities, at an enormous expenditure of money, we do not intend to follow that up to the extent of digging up every main that shows any leakage in it. We intend to dig up only where we can locate large leakages in certain quantities. We are not working on the percentage basis, which means nothing.

"As far as we are concerned, we would be very glad if the Bureau would make a sufficient investigation to determine what is a fair and proper loss per mile of three-inch main and give us advice on that. I want to guard that request with the statement that no uniform standard, I think, can be adopted for all situations, be-

cause of the varied construction of the different systems, and it would not be well, therefore, to undertake to estimate a uniform loss per mile of three-inch main for the whole industry. In other words, each case must stand on its own bottom and each distributor must determine from his own experience what he can afford to expend in the face of what he is selling his gas for, and what he is paying for it.

"I will close by saying that the greatest conservation measure any of us can adopt is for our own people to realize what the gas is worth and sell it for what it is worth."

Mr. Walter W. Freeman.

Mr. Walter W. Freeman of the Union Gas & Electric Company, Cincinnati, said: "I am newer in the business than most of you, although I have been a public utilities operator for about thirty years. My approach to the problem was distinctly the angle of the public at the outset. The first thing that struck me as serious in the natural gas problem was the constant shortages whenever the weather was cold. The complaint coming from the gas consumer that it was no benefit to him to be able to get an ample supply of natural gas when he needed it the least and to be unable to get it when it meant the most to him.

"Having been connected with lines of work where service was always furnished as a matter of fact and where any lack of service was inexcusable, I was frankly shocked at this element in the natural gas business. It took a very short time, however, to find out that it was inevitable and absolutely unavoidable, based on conditions as they existed. So far as I was concerned, personally, I was pretty much in the frame of mind that unless the problem could be solved I wanted to be in some other line of business, because to be indirectly responsible for the discomfort of thousands of people seemed intolerable.

"I think we have solved the shortage problem in Cincinnati within our need as applied to present conditions, and I am just optimistic enough, based on our own experiences, to hope that the problem can be solved throughout the territory through a *proper rate schedule*. It seems to me that is fundamental in our approach to the public in all of these problems. If you start out fundamentally with the proposition of giving service at all times the public will be much more receptive to suggestions that properly follow such a proposition made in good faith.

"Following the shortage problem, there comes up the question, of course, of assuring a supply as long as is possible. It is clearly to the interest of the public and it is clearly to our interest if we are able to continue in the business of supplying natural gas as long as we may be, and what I am interested in, simply because that comes a little closer to me than the practical side of the question just now, is how we can best get to our consumers practicable, workable suggestions for their co-operation with us in continuing the supply of natural gas as long as may be possible.

Rather be criticized for falling down on your job than for laying down on it

se, we must first clean our own house as far before asking the customer to take up his burden. The work being done by the companies shows they are aware of this problem, desiring their full measure of service.

Heen said more than once in this meeting that he likes to discuss the saving of gas except on an emergency basis. That is true. The burden rests upon us to make it as easy as may be practicable for the consumer to utilize gas on a reasonably economical basis. We have been approaching that problem in Chicago.

Mr. Hoover has said, through the publication of other avenues of instruction. Just how to bring the situation before the consumers through public and other means is, however, a serious question which I think we ought to solve as soon as we

are immediately confronted with the suspicion of the consumer that information given to the public is based back of it. To the extent which we can approach the consumer on a basis of confidence, statements made, I think they will be rendered more effective service to the people, and I am very glad we can secure, through the Bureau of Gas Regulation, in that respect having the stamp of the Government on the statements made.

I think it is a problem for the interest of the public that the Government represents them, as we do, as agents. We are all interested in accomplishing the same result. It would be very foolish, even if we were to go to the consumer with any statements based on facts and that are not in his ultimate interest.

In discussing this matter with Mr. Hoover, I have been much pleased to learn that it is the desire of the Board of the Association to establish so far as possible a basis of very direct cooperation with the Bureau of Mines, having in mind education of the consumer in the matter of conservation of gas, to make it clear that it is to his advantage to cooperate with the nation and utilization on the basis of making gas last as long as it will, and serve everybody to a suitable purpose.

Mr. J. H. Martin

Maxwell, Chicago, speaking as of Indiana,

Indiana where I reside, there is practically no gas interests represented, Dawes Bros., Inc., Chicago, as most of those here are primarily in the gas business. We are primarily in the utility manufacturing gas and came into the natural gas some twenty years ago by reason of discovery of natural gas in proximity to property where making gas, so that our attitude towards the consumer has been somewhat different than has been that of the gas business.

We manufacture gas and account for the very

small quantities that we have to account for as compared with the vast quantities that the natural gas man handles, we are more able to account for it and having to buy raw materials, such as coal and oil to make it from, we have, of necessity, attached a different value to it.

"Today we are operating to serve approximately 150,000 users with manufactured gas and about the same number with natural gas, but we are not engaged in the production of natural gas, we obtain it considerably from producers. But we are turning our thoughts towards the future, and perhaps, as much of a contribution as I can make to this gathering would be in connection with the utilization of natural gas in a way that has been but very slightly touched upon at this time.

"Our English speaking gas brothers across the water today are marketing almost all of their gas by what is known to them as the therm, or that quantity which contains heat to the extent of 100,000 B.t.u.

"In this country the eight or nine million users of manufactured gas for domestic purposes use from 150 to 200 therms, for which they pay from \$20 to \$40, and the two and one half million users of natural gas for domestic purposes use from 800 to 1,200 therms, for which they pay from \$20 to \$40, so that if you turn your thoughts to the matter of the purchase price of gas per therm, which we ultimately will, it appears that the natural gas man today is selling a therm or unit of heat for about one sixth of the price that the manufactured gas man is getting for the same thing.

"Briefly, to get to the point that I just mentioned, the utilization of natural gas in a way that I believe will be of the utmost value in conservation, I will say that I just recently assisted in completing a small operation, where locally produced natural gas was utterly inadequate to serve the people, where today it is being fully utilized and the people of that community are being given first class manufactured gas service by using that natural gas in exactly the same way that we use gas oil. I have for this week engagements with owners of other property who will do the same thing where there exists today no possibility of giving communities of natural gas service, but where there is enough natural gas to satisfactorily supply for many years a raw material that can be used in manufacturing gas, but the product will be sold at, and at manufactured-gas prices.

"In the operation that I have immediately in my charge we are carrying forward some experiments, although they have passed far beyond the experimental condition, where we are not now distributing natural gas transported over 800 miles, but we are also using that same natural gas as a raw material which is used in manufacturing and distributing two gases that are sold as manufactured gas. These conform with the standards of the state as to all qualities, as to cleanliness, as to heat value, etc. In fact the requirements of the state are 570 B.t.u. whereas we make a 600 B.t.u. gas that in one case is produced by the manufacture of blue water gas from coke which is converted to an 800 B.t.u. value to 600 by natural gas. In the other case we are producing

Two common failings: Eating too much and talking too much

20,000 feet of 300 B.t.u. gas from a ton of bituminous coal, carbonized in coke ovens, which is enriched to 600 B.t.u. with natural gas.

"This kind of preparation will be of value as and when in different sections of the country natural gas gets down to that low quantity which will make it no more a practical thing to distribute and sell it as natural gas. It can then be used in the manufactured gas business just the same as any other raw material is used in the production of a high-grade manufactured gas."

Mr. L. B. Denning

Mr. L. B. Denning, president of the Natural Gas Association of America, and an important factor in large natural gas company affairs, said:

"There is one point I have not heard touched upon. The business depression of the last two years and the readjustment period, which I hope we have largely gone through, and I feel that we are now on the up grade. has demonstrated to my mind very conclusively one thing in relation to the gas business, and that is that the ordinary gas company, I can safely include all of them in that category, cannot keep doing business and cannot finance and render the service which the public demands upon purely domestic business. (Applause.)"

"We can not lose sight of the relation the industrial branch bears to the total at the present time, nor can we lose that business or surrender it at any time in my judgment. I know of at least two companies whose revenues are considerably less than in previous years, and that loss is brought about by reason of loss of industrial business, and is not offset by increase in price to the domestic business. We must demand a gradual growth."

My suggestion, which may not meet the approval of the assembled gentlemen, but which I submit, is that the sooner we can get the domestic business on the basis of manufactured gas with the right or privilege of getting out and using our energies to convince the manufacturers that they can pay considerably higher prices for natural gas for industrial purposes, the sooner the natural gas business and the public will both be benefited. I have called the bluff of a certain gentleman standing high in the manufactured gas world, who has agreed to have present at the meeting at Kansas City in May a man who will tell the assembly of natural gas men what has been done in the way of developing industrial business. He said he is getting an average of 62 cents a thousand from industrial business. If he can do that from one-half the B.t.u.'s of natural gas, it seems to me the natural gas men have something to learn. Mr. Maxon can tell me whether or not it is a bluff."

Mr. Maxon: I can say the gentleman will have to sell his gas at the price that will meet the cost of gas made from bituminous coal and of fuel oil and he will have to deliver a certain number of therms for a certain number of dollars, or he cannot do the business. The oil man and the coal man will fix the price of his gas.

President Denning: We cannot go ahead on the present prices paid for domestic gas, and I doubt if we could do that if we were being paid the customary price of manufactured gas, without industrial business.

"We have proceeded along certain definite lines. Our policy has been to co-operate with the public to the greatest extent possible. I will put it this way. We undertook to carry out the idea of making inspection upon some of the properties. The reaction was not good. They thought it was doing something the gas companies were seeking to compel them to do. We abandoned it. We have taken another plan, that of publicity, pointing out to the domestic consumer how and in what way they can aid themselves, standing ready to co-operate with them and give them assistance, trying to arouse in their minds a desire to be helped, figuring that if the housekeeper is interested and will ask for it we will get better co-operation. The result is we are not spending as much as inspection would demand and I believe we are getting results."

Mr. Christy P. Payne.

Mr. Christy P. Payne, whose interests lie in very important natural gas circles said:

"During the past two years the companies with which I have been associated have had three investigations, made by engineers; one was for a local rate situation, involving appraisal and study of rates. The second was made by a national engineering firm with a staff of over a hundred men, studying the problem of appraisal, the amount of gas available for market, and what price would have to be realized to obtain operating expenses, interest on investment, etc. The third engineers have studied the problem from the point of view of depreciation and Federal income tax purposes. The conclusion has come to us that from merely domestic business, no matter how high the price, you will never be able to realize returns on your investment, unless you sell for industrial purposes. They have made a study to show, when price increases, how much delivery to domestic consumers will decline, and they determined that your gross sales will be so cut for domestic delivery that you will not have income sufficient to pay return, and you must sell for industrial purposes to have the proper economic result."

"I am not saying what price the domestic consumer will cut, it may be 60 cents or 70 cents, 80 cents or a dollar, but somewhere in there it cuts the delivery, so that you must have the industrial business to maintain your plant. The public welfare and the company welfare are synonymous terms."

Director Bain: As a plant, do you make contracts to supply industrial consumers for only a part of a year?

Mr. Payne: Every contract contains that provision. Every industrial consumer must relinquish his supply when needed by domestic consumers.

Director Bain: What does he do during the winter?

Mr. Payne: During the past two winters there has been very little industrial demand. Prior to that time

To be good is noble, but to teach others how to be good is nobler—and less trouble—Mark Twain

we were not for prolonged periods—ten days or so, and during that time the industrial man goes down unless he had laid in an auxiliary supply of other fuel, which a good many are equipped

Bain—I was wondering whether you could do, in a broad way, for industrial plants to try plants.

Burt—I great many do that in Pittsburgh.

Baine—What type would that be?

Burt—Fuel oil, the change is made with less cost. Whenever they can get natural gas they use that at the rates heretofore prevailing.

Bain—I would think that your price would be in competition with coal, as also would be the fuel oil, which sells for less than its value.

The very large number of people who are not given a force to the selling price that they cover into the oil field.

Burt—We cannot take advantage of that situation. We have made an investigation which, I think has stated, shows that at any price the Company could secure, it could not exist in business alone.

Industrial gas business becomes a matter of pure and simple. The industrial gas user paid, if he could save money, to buy oil or even, we run up against a situation that is not with the domestic consumer, that there is inherently wrong when a gas company will

the price for domestic business and will not sell to an industrial plant at a very reduced price. The consumer honestly does not take that situation, the gas man does. It is hard and we get no assistance from public authorities in some way aid in promulgating among the idea that the practice is a proper one.

thing I do not know how it is in some sections rates for either domestic or industrial through some sort of formulating process are established. There is no flexibility and nature of things we are prohibited from taking of the matter of flexibility in rates. It is much better for all concerned if there was less action regarding the rates on industrial gas. They could follow competitive rates and charge as much as they can, it would be to the benefit of the domestic consumer.

Fuel oil is our great competitor. It jumps up. We have to go through a long procedure of thirty days notice and other delays and you get through your fuel oil will jump away and do not want the rate.

It is better if you could charge all the traffic, because the consumer is wholly selfish in this. He only buys gas when he can see a profit. He is prevented from taking advantage of it, which I think should be taken advantage

of. That gets us back to the idea that the public is entirely misinformed. For it will not accept as truth the statement of the gas companies that the practice of charging lower rates for industrial gas is a proper one.

Here the chairman, in explanation, addressed the Director, who following, took the floor.

Mr. Director, we find it an impossibility to get together to talk conservation unless the value of the fuel is talked of and I hope you will realize that this is not a rate-making body, but that the subject of price must come up.

Mr. H. Foster Fair

Director Bain—Any conservation must be based on good economy, and rates enter into the thing, and I believe the Bureau of Mines will be more helpful to the industry if we do not as a Bureau get into the rate business. (General approval of this statement was voiced.) I, as an individual, when buying anthracite coal pay more for it than those who buy it in large lots. The public is educated to that. That is a general matter of public policy and economy. In the question of whether you should have fixed rates or flexible rates you get into the analogy of railroad control, and the public needs more education than we could give it, and I think the Bureau could be more helpful to stick to the technical phases of the matter and to matters of fact.

As I get it from the discussion this morning, it comes down to two sorts of things. First, with regard to the amount of further education that is needed in the organizations of the companies themselves and their plants.

And that runs into the question as to whether or not we have the facts all available that we want, and perhaps leads to the discussion of the question of whether we should not do more work along the line that Mr. Cattell is just starting out to do.

The other question is the amount of information that would be helpful to the public.

The matter of finding out what is going on, and the possibility of making the best of your experience from one part of the industry available for all is the sort of thing that Mr. Cattell is just starting on, and I think that with your cooperation much can be accomplished.

There are differences in experience as to just what losses there are in leakage. That will be a rather long campaign and we are just beginning on it. We are going at it open minded. We have not a fixed opinion as to whether your losses are 1.50 per cent or 2 per cent. The loss may be big or little, it may be important or not, it may be easy to stop or it may not.

The other matter that is our main one that is to be given out to the public is to get the cooperation of the Bureau of Mines it seems to me we should continue along the present lines. We want the Association to bring its information out and as to the method of putting that over to the public, you will use these campaigns in towns, schools and exhibits, all of which we think are good, as we have found to be the case in our mine-recure and best and work that the more we take

to be able to look back to a day well lived than ahead to a month of promise—The Lamp

the matter right to the people the better co-operation we get.

As to the suggestion that the department could help you in some form of education campaign, we do this in connection with moving pictures. We co-operate in making moving pictures. Provided the picture is censored by us before going out, we put a label on this picture to the effect that it was produced in co-operation with the Bureau of Mines, and we become responsible for the technical accuracy of the picture.

If you want to start a general public advertising campaign directed to the need of conserving the gas and the better use of gas, with a view to teaching the people not to waste gas, it is entirely possible that by going over that matter with us we can join with you to some extent, or we can put in your advertisements a little block of subject matter of some definite, pertinent, technical matter as coming from the Bureau of Mines. If that will be helpful I will be glad to have your publicity campaign committee consider that with us and go over it. We would, necessarily, have to hold the right to censor anything that would come to the public from us, but subject to that, we would be very glad to help.

Mr. L. B. Denning.

Association President Denning: We certainly appreciate the interest which the Bureau of Mines and the Department of the Interior is taking in our problems. We desire to co-operate with you at every stage and shall be very glad to work with you.

Addressing Hon. Fall, Secretary of the Interior, who had entered the room, President Denning said: Mr. Secretary, while on my feet, speaking as president of the Natural Gas Association, I would say that at Kansas City, beginning May 15th, the Natural Gas Association will hold its annual meeting. We will have in the neighborhood of a thousand to twelve thousand members present. The roughnecks and the executives will all be there. On the 17th, we will hold our annual dinner, and I have the honor to extend to you, on behalf of the Association, the invitation to be present at the meeting and to speak at the dinner on the evening of the 17th, and I assure you it would be a great pleasure to have you with us.

Hon. Albert B. Fall, Secretary of the Interior.

Secretary Fall: Mr. President, it is very kind of you. I have the distinction of being the one member of the Cabinet who tries to avoid the making of speeches, but I am glad to be able to meet people who are doing something for the country in your line of work. I do not know whether it will be possible for me to meet with you, but I would like to, however, whether or not I am there, the Department will be represented. I can assure you of that, and I can assure you that you will have the active co-operation of this department in every possible way.

I think it the duty of the Government to go just as far as it can in assisting our industries, and it is certainly the duty of this Department, as I understand it, to help you in developing the industry you represent. I do

not want the Government in competition with any of its business men. The Government is in business despite itself in oil and gas to some extent, as you know, under the leasing law, but we endeavor to conduct that so as not to compete with, but to assist those engaged in the development of the industry."

Director Bain, resuming, said: There is one other point that has come up. The gas business touches the oil business at a great many places, and I do not know that there is quite the co-operation that there might be between the gas man and the oil man. When I talk to you gas people, why apparently it is the oil people who need education, and when I talk to the oil people the gas man is a nuisance. Should they not, in some of these matters, get together? The big advantage I have seen is in the oil fields. The gas company can only be responsible for the amount of gas it can supply. You have got to amortize your pipe lines; you have got to do a lot of things. Would it be worth while to try to help educate each other?

Mr. Payne: Mr. Freeman suggested that maybe the gas company is a nuisance in our own family. That is quite right, but there has been a beginning of co-operation between some of the producing companies and the gas companies, as I pointed out, as a matter of inspection. I find that in the Petroleum Institute there is not a great deal of attention paid to natural gas, and that is probably the notion that the Director finds, and what the remedy is I have not given any thought to. It seems to me that at the next meeting of the Association that subject could be given attention to see if the American Petroleum Institute's activities might not be made more sympathetic.

The Petroleum Institute is a very well organized and very strong institution. It has succeeded in uniting many warring oil factions for the good of the industry and the public welfare, and I am quite sure that if we can get the respect and interest which the Institute at first intended to have for the natural gas industry, it would be a distinct gain.

Mr. Chase: Mr. Payne spoke of the sympathy of the oil man towards the natural gas industry. I think we have discovered the secret of arousing the oil man's sympathetic viewpoint. Formerly they paid for gas in the field as low as a cent and a half a thousand. It has not been very many years since gas was sold at a common price of three cents thousand in the mid-continental field.

The Lone Star Gas Company was short of gas several years ago and did not know what to do. We raised the price of gas, doubled it, and then we more than doubled it, trebled it. You know, we have the most sympathetic feeling now from the oil man. He is filled with sympathy. The only thing is, he complains that we do not take enough gas. He knows there is oil below that gas and if he can just get rid of that gas at a price, he is in entire sympathy with us he would like to do it. Now that is a secret.

Mr. Owen: Gentlemen, I operate in the Osage Nation in Oklahoma, and I believe it is the only safe place to

Greatness does not consist in never failing, but in rising every time you fall—Confucius

play the gas game. You are under the Bureau of Mines. If the oil man drills into a pocket of gas the superintendent compels him to shut it off. If he does not his lease will be taken away from him. That is, he must mud the gas off until he gets the oil in paying quantities. A good many times I have had to make them mud off. I have had men find gas of twenty-five million feet a day but had no market for it. I am also an oil man and I have never yet seen an oil man who would not let the gas go into the air. There is enough gas going to waste in the state of Oklahoma to run the state of Ohio. I have seen wells brought in from day to day making any way from ten to forty million feet of gas a day. The oil man wants to get the oil out. It seems to me that is the great place of waste in the natural gas business.

I do not think the city waste amounts to anything in comparison with the waste in the fields, and if the Bureau of Mines can impress on the utilities commissions of the various states the value of this gas and force these men to conserve the gas it will be a great help.

Sometimes you find oil and gas together. There is a separating device. The oil man takes his oil and the gas man takes the gas, and I think the Bureau of Mines can be of very great help to us along this line.

I do not think that always we get just what we ought to from the Bureau. I have known them to turn the wells over to the oil operator without any reason for doing it but to let the oil operator have gas to drill his oil with. Therefore, in that country oil is paramount to gas, and I do not think the Government places quite the value on gas that it should. It was not very long ago that an oil man brought in a gas well which I could not utilize as I was carrying three times as much gas as I could possibly sell, and the Government turned it over to the oil man that he might use it for drilling purposes.

There are no small leases there. The smallest lease is about a hundred thousand acres and the largest is 302,000 acres, so you see that we do not have quite the trouble you have where your leases run from ten acres up.

Director Bain: We are very glad to get some praise and take some blame. It happens, however, that we are not in charge of the Osage Nation. It is now being operated under J. George Wright of the Indian Office. We help in technical difficulties, but the actual administration is in their hands. We help in such matters as the work that was done down at Bartlesville last summer in having oil men use low pressure burners.

The Chairman: I believe, as a suggestion, it would be well to refer these matters of oil and gas to the Committee on Conservation of the Natural Gas Association. The Chairman is here and on that committee are representatives of both the eastern and western companies; they can review the situation and possibly work out some method of co-operation with the oil man. If there are no objections we will handle it in that way.

Director Bain: Do you have a committee on publicity?

The Chairman: Mr. Hoover is chairman of that committee.

Director Bain: Will Mr. Hoover's committee take up with us any suggestions as to advertising?

The Chairman: I think they can more easily co-operate with you than can the association as a whole.

Mr. Swigart: I might say that, from a technical and practical standpoint of operating, it is entirely possible to conserve the natural gas of the wells, and it is being done every day. I think it is a very good plan to take that up.

No action was taken.

The Chairman here adjourned the meeting.

A BIT OF A PERSONAL NATURE

PRESIDENT L. B. Denning of the Natural Gas Association of America, and responsible for the operations of large gas interests, has shown to what extent man may be engrossed by newly formed family ties, and yet keep close touch on matters of a very material nature.

President Denning was present at the Natural Gas Conference of recent date, held at the Bureau of Mines in Washington. Note this; he was introduced as follows:

"We have with us the President of the Natural Gas Association of America. Let me introduce Mr. L. B. Denning who we might say is not on a 'business' trip, but is our latest bridegroom."

PETROLEUM LAWS OF ALL AMERICA

The following notice is received from the American Petroleum Institute that it may be broadcasted through the columns of The GAS INDUSTRY Magazine.—Editor's note.

JUDGE J. W. Thompson has collected and had translated considerable material to be used as a supplement to Bureau of Mines' Bulletin No. 206, entitled "Petroleum Laws of All America." The Bureau has no funds available for publishing this material without interference with its essential publication work, but it has deposited Judge Thompson's original manuscript with the Institute in order that the information might be available to interested oil men. The material embraces circulars issued by the U. S. Department of the Interior, and laws, executive orders, etc., of Mexico, three Central American and seven South American countries.

The material, if printed, would cover perhaps one hundred pages and therefore the Institute will not publish it, but the manuscript may be reviewed at the general headquarters, 15 West 44th Street, New York, or typewritten copies of it may be procured for the cost of typing.

Luck means the constant and complete use of your own resources

Cooking With Waste Gas

*Household Tank Heaters Source of Waste. How it
Can be Avoided*

THOSE of us who a few years ago at night traveled through Pennsylvania on various of the steam railway lines well remember the big standpipes that rose at various corners in little towns and larger communities along the railways, from the apex of which standpipes blazed day and night, day in and day out, and night in and night out, great flambeaux illuminating the country round for miles. It was the burning of natural gas let loose, millions upon millions, and billions upon billions of cubic feet wasted every day and every night.

From this riotous condition, regardless of the future and of the comfort and pleasure of those later to come on, a great industry grew up and took to itself the name "natural gas industry."

Year after year, the waste has continued, diminishing however, in volume by virtue of diminishing supply, and an awakening to the fact that whereas there was plenty and to spare, that plenty has gradually been disappearing without replenishing.

Today the Bureau of Mines of the Department of the Interior, the gas companies, we publishers, and others, are putting forth exceeding effort to encourage and to accomplish the conserving of natural gas. And now from the pen of E. D. Ivory comes an article descriptive of ways by which much gas may be saved through the proper burning of the element for the producing of heat. The writer says, as it will be seen, that in many instances, if gas users would use gas properly in water heaters, they would produce the results they are after, and have sufficient gas left to do all their cooking.

We will reprint the writing of Mr. Ivory, using the illustrations that we gratefully acknowledge from his hand, knowing that although the prime object in preparing this matter was to induce saving in the natural gas field. Our readers in the manufactured gas industry will be much interested, and we are sure many will be profited.

Mr. Ivory, the writer, is Commercial Manager of the Peoples Natural Gas Company of Pittsburgh, one of the examples of progressive and aggressive types of companies that are aiding in the converting of the field of natural gas from the attitude of a piece of pipe drilled to form a burner, to the use by the public of the highest types of gas appliances that today are being produced countrywide. The Peoples Company is out to give the public service. It is one of the natural gas

companies handling gas appliances, and mindfully of future is specializing along the lines of service to public.

Mr. Ivory's writing is as follows:

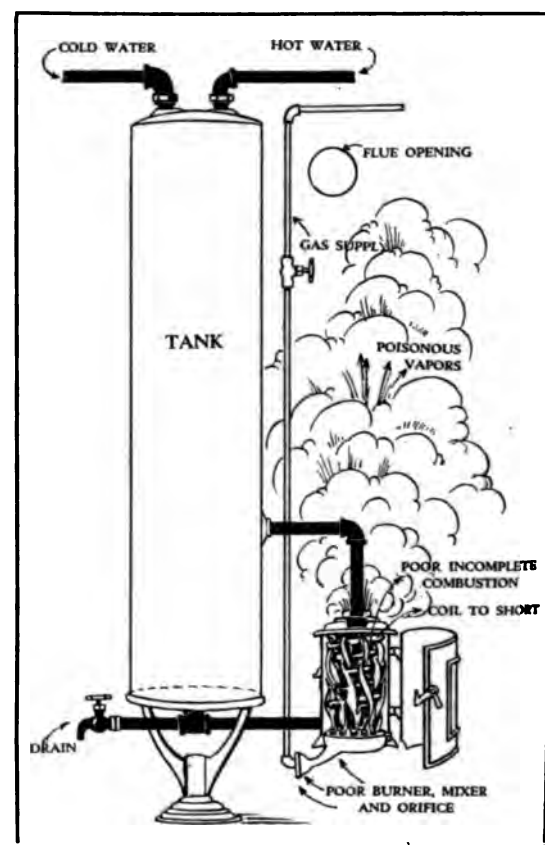


FIG. 1.

AFTER making thorough tests of household tank water heaters and of best methods to conserve heat in the water, it has been found by observation and comparison that thousands of consumers use nearly *five times* more gas to heat water for household use than is actually necessary.

If these thousands of consumers would correct the wasteful conditions existing, they would not only have plenty of gas to heat water, but they would have enough left to do all their cooking. This would amount to more than 1,000 meals per year, would greatly reduce gas bills, and help to avoid a shortage of gas.

We have here endeavored to point out a number of

The thing that matters is what you think of yourself, and that you believe in yourself—Befel

bits that should be corrected and to show features it should be added to make such equipment more instant and economical.

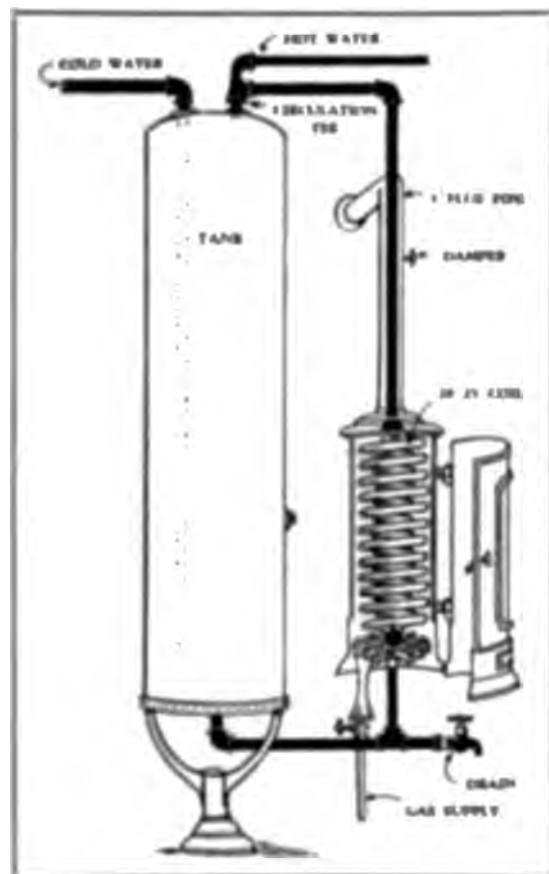


Fig. 2

Fig. 1 is a good example of a very poor and inefficient heater. Note these faults: Short, undersized and ineffective coils, poor burner and mixer, non-removable gas orifice, burner and mixer clogged with oil and dust, entirely too much gas for capacity of water, insufficient air through mixer and around flame.

The result is incomplete combustion, long sluggish slow flame, plenty of soot, carbon, all of which combine to accomplish until it is almost impossible to get to penetrate the carbon-insulated coils into the water. Part of the gas passes out unburnt, causing unpleasant irritating odors and worst of all poisonous gases which cannot be detected by an odor. This could also apply to any other gas appliance. The public should be taught that such a condition is dangerous and all the plumber or the gas company at once.

To Make Your Equipment Most Efficient: Provide proper cover (see fig. 3) to carry out ordinary products of combustion, or escaping gas in case flame should be instantly extinguished.

Provide automatic draft regulator to check excessive draft, wasting heat, or any down draft which might smother or extinguish the flame (see fig. 3).

Provide cold water tube to aid circulation and prevent cold water from flowing directly over to hot water outlet as illustrated in fig. 2.

Low side connection for hot water from heater to tank causes poor circulation, slow heating of water. Nearly entire tank of water must be heated to obtain a few gallons, burning gas continuously to have two or three gallons available when needed. This is a great waste of gas.

The remedy is a top or high side connection, as shown in figs. 2, 3 and 4, either of which will make three or four gallons of hot water available within a few minutes after lighting the gas.

The gas should be turned out immediately after the required amount of water is drawn.

An asbestos tank covering as shown in fig. 3 is of utmost importance to conserve heat in the water by stopping excess radiation of heat from the tank. This

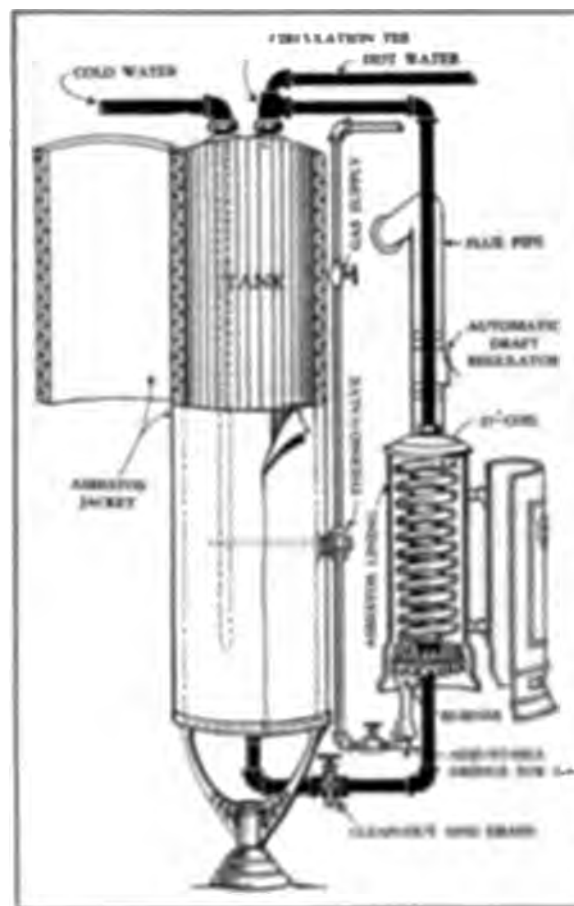


Fig. 3

should reduce gas consumption to 40 per cent or 50 per cent.

Provide non-leaky insulation for the top connection to prevent seepage of cold water into hot water outlet and to avoid use of excess gas to overcome the consequent cooling effect (fig. 3).

Tomorrow: The day when idle men work and fools reform — Nuggets

Heater should be lined with asbestos to avoid loss of heat by radiation.

Provide "clean-out" shown on fig. 3, to remove sediment and mineral deposits from tank and coils, to prolong the life of both, and to save gas!

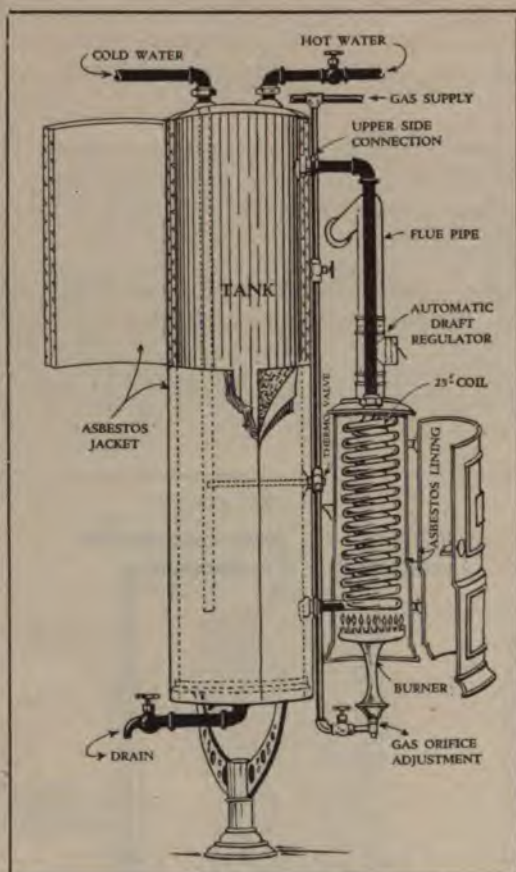


FIG. 4.

A thermo-valve is a gas-saver, and a great convenience where constant storage of hot water is necessary. It will retain any temperature desired, prevent excessive heating of the water and hold gas consumption down to actual requirements only.

Fig. 4 shows the high-side connection which will permit rapid circulation of water, will produce several gallons of hot water very quickly, will avoid steaming and siphonage, and will greatly prolong the life of the fittings.

Avoid wasteful, careless use of hot water at the faucets, and see that the faucets do not leak.

Compare water-heating equipment with preceding specifications, suggestions and sketches, make all corrections possible, and the result will ensure for greater satisfaction, materially cut down gas bills and help to avoid a shortage of gas, or make available for some other purpose 60 to 80 per cent of the gas now used.

The Instantaneous Type:—If you have an Instantaneous or Automatic Water Heater, see that the burners, burner screens, mixers, gas orifices, and coils are clean, and free from dust, lint and carbon.

Flame from main burners should be blue, and just as low as is consistent with rapid service at faucets. Stop leaks at faucets.

Pilot flame may be yellow but turned low so will not deposit soot.

Provide flue-connection with automatic draft regulator.

A Word About the Horseshoe Burner Type:—One of the most wasteful installations found among many thousands inspected, and one which may be easily corrected to a high degree of efficiency, is illustrated by comparison fig. 5.

This is an ordinary tank with a horseshoe burner underneath. Without the heat-confining and insulating jackets shown, the gas waste is enormous in the

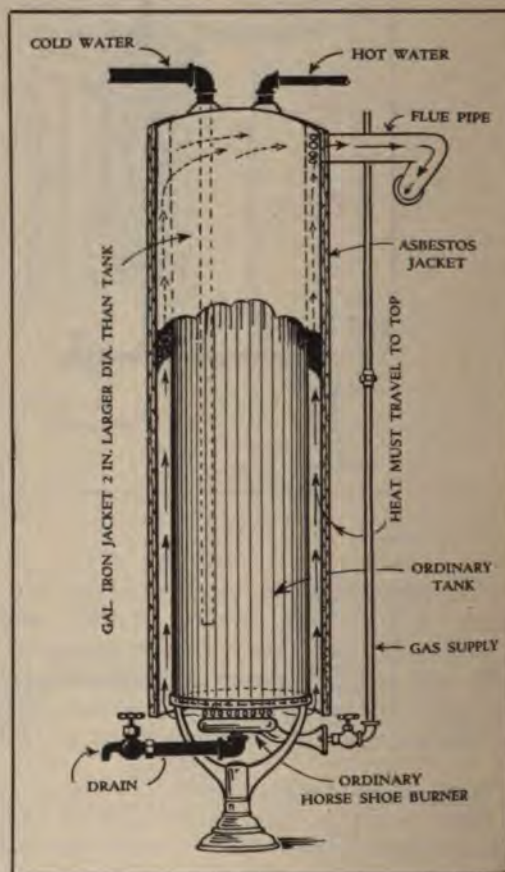


FIG. 5.

gate, as a very small percentage of the heat developed penetrates the bottom of the tank into the water, the greater part being actually spent or wasted into the atmosphere.

There is also a great waste of heat from the water through the walls of the tank into space.

An excessive volume of gas is required to offset these losses, as it is necessary to heat the water over and over, and in most cases more than half the heat put into the water is lost by radiation.

To remedy, place sheet-iron jackets as shown (fig. 5).

If you have any hope of a managerial position, first learn to boss emotion—Kaufman

g lunch space (all around tanks) into which the ordinarily wasted from the flame, will pass and upward over a tank heating surface 18 times as than the mere bottom of the tank. Now cover on jacket with asbestos insulation of ample thickness which if properly applied will save three fourths radiation losses. See that the burner, mixer and other are of proper size and clean, producing a sharp blue flame, and you will be agreeably surprised at the efficient and economical equipment you made from a crude, wasteful one. Such installations are not infrequent in the natural gas field.

KANSAS AND GULF ADDS WELLS

FOLLOWING an inspection of the Kansas & Gulf Company's properties in Kansas, President H. F. Mouser announces authorization for the immediate drilling of six new wells, four of them will be located on the 280 acres Brown in South Butler county which is in the center of recent production in the Fox Bush field extending south well will be drilled in conjunction with Council Oil Company on the Greely farm in the same field.

providing for drilling operations on a large scale, Kansas & Gulf company has erected several new houses and pump houses on the Brown lease. A concrete dam 100 feet long and 7 feet high has been erected to furnish an adequate supply of water.

AN UNSOLD FIELD

THE American Gas Association is seeking to assist the gas companies of this country to make their "coal" fields "sold" fields rather than "unsold" fields. It asks the question in so far as water is concerned, "How long will the field remain unsold?" It then answers the question by saying "Until the gas company gets 100 per cent of its money heating water by gas."

The Commercial Section of the A. G. A. unite efforts to stimulate sales of appliances, and this section suggests in the field of water heaters that gas users should cooperate with plumbers. In its movement along this line, the Association says:

"Local plumbers can be a great aid in extending the use of gas for water heating or they can be largely influential in recommending coal stoves. In fact, this influence may not count for much, collectively it is quite a factor and will be felt more and more by the gas company. It is suggested that the plumbers should be individually interviewed and made acquainted with the company's plans and some co-operative arrangement entered into which will be reciprocally beneficial to both gas company and the dealer."

The A. G. A., in concluding its statements, says:

"There are but 1,500,000 gas water heaters of all types installed on the lines of gas companies, whereas nearly 7,000,000 gas cooking appliances are doing service, so that it requires but little stretch of the imagination to see the wonderful possibilities in gas sales from the intensive cultivation of this unlimited field."

"Have you as many automatic water heaters in your town as there are automobiles or pianos, or victrolas? If you have not, here is a worthy goal for your efforts."

It is to be hoped that the gas interests will enter wholeheartedly into the sales campaign covering water heaters, ranges, etc., etc., that will be advocated by the association. Let us try it!

CLASSIFYING THE PUBLIC

Wealth, Income and Occupational Classification of the American People—A Chart Cleverly Prepared by Samuel S. Wyer

(SEE CHART ON FORTY-NINTH PAGE)

THE diagram at the left, in public utility parlance, shows the present fair value of the American people's property to be 273 billion dollars, with buildings and land represented 80 billion dollars, agricultural property represents 75 billion dollars, and all the public utilities represent 41 billion dollars, of which 25 billion of there is already paid.

This shows that the American farmer with land and buildings worth 75 billion dollars has only 4 billion dollars of farm mortgages. The total gold and silver, or our so-called "hard money," represents about 4 billion dollars. The total war debt is 11 billion and our total foreign investments but 4 billion.

Our annual income in 1920 was 160 billion dollars and in the pre-war years 100 billion. In 1922 and the immediate future will be about 160 billion.

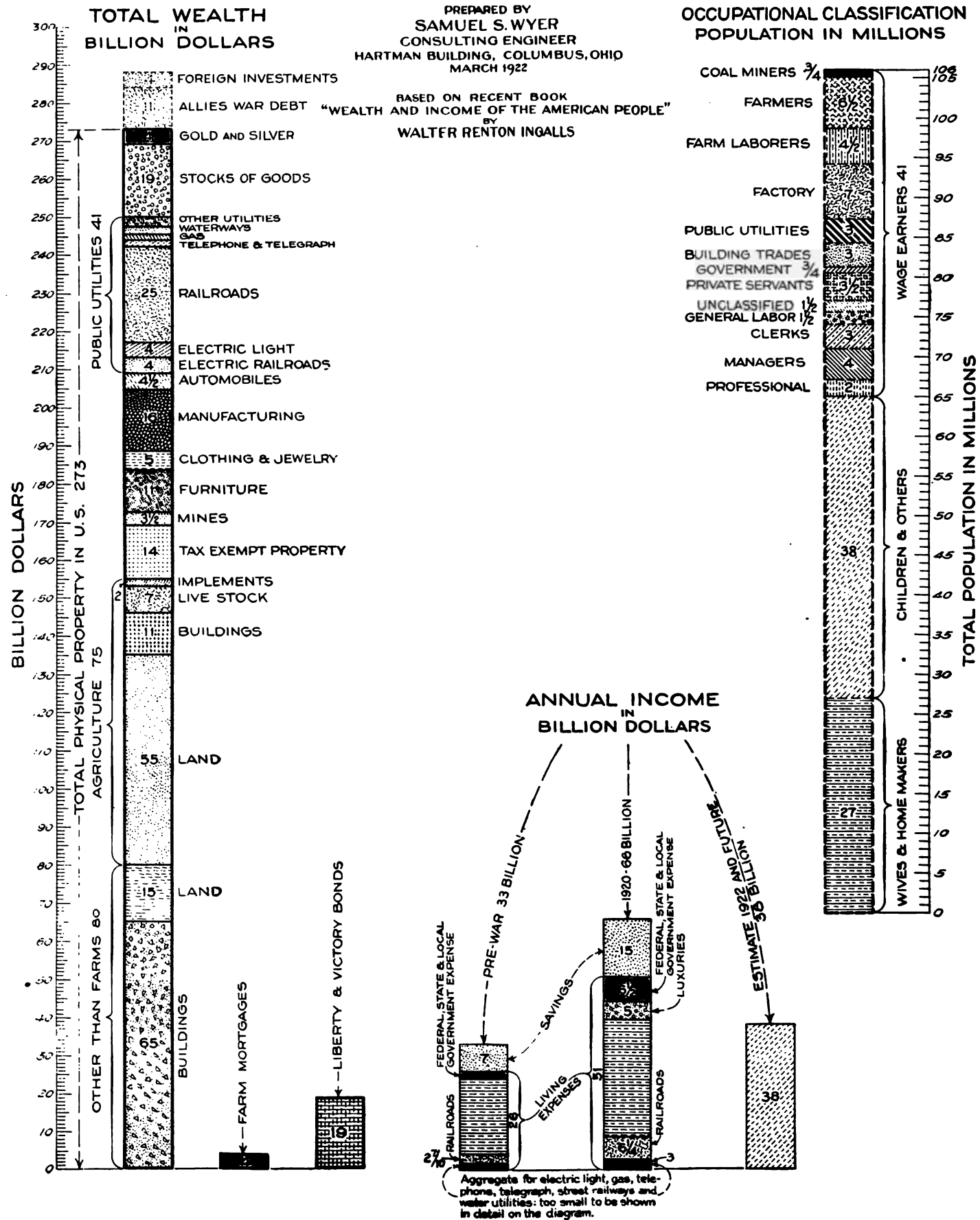
In 1920 60 per cent of the total 160 billion dollars of the American income went to individuals and 4 billion to other public utilities, other industries cost 4 billion and the total Federal, State and local government expense was 10 billion, but our savings were 15 billion. Our total living expense was 41 billion.

An interesting comparison here is that for the year 1920 is that the total income of business in the United States of the American people was 160 times the 4 billion gold and silver in the country, showing that our business was the most profitable in the world.

In the same year, 1920, the total population of the United States was 100,000,000, 25 million are women and 10 million are children and 10 million are the largest of the total population, the farmers and farm laborers totaling 11 million. Evidently the business men are about 10 million and therefore represent a total of about 10 million and the big up of American industry is a glaring example of what a small minority can do for a total population.

A lot of us still keep our brains in captivity

WEALTH, ANNUAL INCOME AND OCCUPATIONAL CLASSIFICATION OF THE AMERICAN PEOPLE



***A Glimpse Behind the Scenes in the Natural Gas Industry Would be an Excellent Means
of Educating the Public to the End That Better Understanding
May be Established***

after Mrs. Brown and her husband, an attorney at Law, President of the District of Columbia at Mexico, Texas, which the subject feared might bring to Texas that she wants to buy no an expressed in the following: "There having earlier impression upon the industry a future amount of East with Texas were for his suggestion that subject of the fact might be in the possession of these commodities of Mrs. [redacted] note."

in the U.S. southwest banks out the usual large gaps between gas-producing, deep-sea markets, scattered population, the threat of water and supply of natural gas, and the influence of the size of individual gas basins on the regulatory powers of the government and the circumstances that it is subject to. It is clearly arbitrary to

[illegible]

And yet limited to a mere period of hours in the twenty-four that makes it, for the whole year, a service not competent to the gas service must be used to the maximum. It must be thus estimated, even at the best, ten cold hours extended throughout the entire twenty-four, and almost as often as at the cold hours it will extend throughout the year.

For the first time, the U.S. Environmental Protection Agency has issued a warning that the use of leaded gasoline may be hazardous to the health of children. The agency's new findings are based on a study of lead levels in the blood of children living in areas with high levels of leaded gasoline. The study found that children living in these areas had higher levels of lead in their blood than children living in areas with low levels of leaded gasoline. The agency's findings are based on a study of lead levels in the blood of children living in areas with high levels of leaded gasoline. The study found that children living in these areas had higher levels of lead in their blood than children living in areas with low levels of leaded gasoline. The agency's findings are based on a study of lead levels in the blood of children living in areas with high levels of leaded gasoline. The study found that children living in these areas had higher levels of lead in their blood than children living in areas with low levels of leaded gasoline.

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...and the fact that the *Journal* is a journal of the American Psychological Association, the largest and most influential organization in the field of psychology, adds to the journal's prestige and makes it a must-read for all psychologists.

Very few if any, persistent advertisers have failed to attain results

to make chill the environs of gas consumers. Citizens are apt to wake shivering in the blast of sudden freezing weather, and immediately light every gas burner in the house at full capacity, and for five or six hours until the house is thoroughly warmed and the first two meals of the day prepared, these burners are kept wide open. Of course, with the more important kitchen activities of the day over, and the house once more comfortable as to temperature, a number of the household burners are turned off at noon. But, the demand for the day must be based on the morning need and not upon the average winter demand and the gas service must be such that it will instantly supply enough gas to meet this extra heavy drain, even if it is for only a few hours of the twenty-four. This emergency demand for gas, if continued at the rate for the coldest hours through the twenty-four of the day, would approach sixty million cubic feet of gas, that is, if the extreme cold weather and the heating and cooking necessities in the households stayed at the rate gas is consumed on the colder days, from six a. m. to twelve o'clock noon, around fifty-seven million cubic feet of gas would be called into service. Only about thirty million cubic feet of gas is usually used in a city of 30,000 domestic consumers on days of extreme cold, but early morning hours of such days gas must be supplied at the rate of almost sixty million cubic feet. To meet these emergencies, therefore, the gas company must be prepared to supply gas at the rate of sixty million cubic feet in order to do so when gas is vitally needed at times of unusual cold.

Both in towns and in the field, the gas company must be equipped and manned to take care of this maximum demand for gas, although it is only actually called upon to deliver this maximum amount for a very short time during the winter season. First, the gas company must have this maximum quantity of gas available for instant use; next, it must possess the mechanical equipment and man power for delivering gas at the highest ratio needed. Between the average demand and the ratio of cold hours (reckoned by periods of twenty-four hours) there is a difference of more than fifty million cubic feet of gas. If the gas allotted to such a city was conserved for exclusive domestic use, the gas company would be obliged to earn from a daily average sale of seven and one-half million cubic feet, a reasonable return upon its investment in lines, distributing equipment and source of supply capable of delivering gas for certain cold hours on the colder days, at the rate of almost sixty million cubic feet of gas. Not only that, but the price to the consumer would include, beside leakage (about thirty per cent between the field and consumer), depletion of plant, interest and increased operating expenses contingent upon the maximum gas demand. It is this extra expense, or the difference between the daily average and the maximum, that is taken by allowing the industries to make use of the gas. Needless to say, an enforced reservation of this gas for solely domestic use would at least treble its price to the consumer. The question now to be decided is this: "Would the consumer receive an adequate compensation for this increased price, both in

length of time for natural gas service (limited always), and, in convenience?"

Gas experts who have spent long years in the service of consumers in the Southwest, believe that consumers would not have an advantage to themselves in a fair ratio to the price they would have to pay for gas. In Texas, the gas for average requirements of a city of 150,000 population, namely, seven and one-half million cubic feet daily, might be supplied from eight to ten wells of average rock pressure and volume of yield. But to meet peak load requirements, the gas company must have fifty to eighty gas wells available for emergency use. If the gas company has required to supply for sole domestic consumption, output of all of its wells save eight or ten would necessarily have to be shut in during the greater part of the year, and the gas company would have no other use for its product were it limited entirely to domestic consumption.

In Texas, as we have said, the transmission lines bringing gas from the field to town, are from thirty-five to two hundred miles in length, with an average of 100 miles. To supply a town of 30,000 inhabitants or consumers, with its average need of seven and one-half cubic feet of gas a day, an eight-inch line, costing about \$11,000.00 per mile, would be required. To care for the maximum demand, however, the company would need a sixteen-inch line, which would cost \$20,000.00 per mile, or, nearly two times the cost of the eight-inch line.

The distributing system in the town must be based on the maximum need of gas, and its expense of installation and maintenance will be proportionately great. Compressor stations must be designed to handle the maximum gas requirements. The upkeep on this plant and equipment is ten times as great as upon equipment for average consumption, and the labor four or five times as great. The inconvenience and unfairness to labor of part-time employment should also be considered in the matter of limiting the use of natural gas for domestic consumption.

It would appear on the surface, that the gas well not required in cold weather could be shut in and conserved, thus necessitating no added investment, when figured over a sufficient period of years, for the drilling of new or additional wells. Southwestern conditions, however, preclude this plan, as it is not practicable. From experience, gas producers in the Southwest have discovered that many wells cannot be shut down for any appreciable length of time without serious loss of rock pressure and volume. This loss is caused by underground depreciation and water encroachment. In a large percentage of cases, also, offset wells force the gas companies to take gas from such offset wells ready for production, or lose gas from its own wells by drainage through the offset wells.

In Texas the expectancy of production from a gas well can be safely estimated for only two years, and even with this estimation of production, if the well was shut in for any length of time during this period, the

Fortune has wings. It wouldn't get anywhere if it remained on the ground

Many a man who punches a time clock lives to wear a full jewelled chronometer

HOW WE GET BUSINESS IN KANSAS CITY, MISSOURI

By C. W. GREEN,
Vice-President and General Manager, Kansas City Gas Company

A brief statement of how they do it in the place we
are going to in May.—Editor.

YOU hear a great many complaints about business conditions. Eight men out of ten you talk to say there is little or no business, people will not buy and the prospects for the future are very bad. This is a mistake. There are more people in the United States today than there ever were and they all have to buy goods, but they are getting "wise." They will not pay more for goods than they feel they are worth. Show them values and they will buy.

In order to prove that my contention is correct, I will give an example. On February 6th, our gas company put on a sale of gas ranges of a certain make. We did a lot of advertising in the newspapers. We also put out an advertisement that fitted on the door knobs of the residences of the city, stating that this sale would start on February 6th. On the first day we sold 103 ranges, while during the previous six months we had sold but 242 of the same kind of stoves. The reason we were able to sell 103 ranges the first day of this sale was because we made a price that on the face of it showed the public they were getting their money's worth, and were at the same time buying a high-class range.

Another feature of our work in Kansas City is showing the users of gas how those save money who buy *modern gas appliances*. We secured good talent who gave talks to the women's clubs throughout the city, explaining by charts, the difference in cost of operating an old style and a modern gas appliance.

Our company is trying in every way to let the public know that with it, *service comes first*. Dividends will follow good service.

We treat our employes as men and women should be treated and not as cogs in a big machine, and thus we gain their co-operation. The heads of the several departments seek to make the employees under them feel that they are their friends, and not that their only interest in them is to get as much work as possible out of each one. We find this is a big help in giving service to the public.

We have a club, organized by our employees, which is known as the "Good Fellowship Club." In this club all of the officers of the company are members, while all offices in the club are held by employees; none by officers of the company. A meeting is held each month to transact business, and four or five dances are given during the winter, with an annual picnic in the summer. The picnic is largely attended by the employees and their families.

These various gatherings bring the heads of departments closer to their men and create that spirit expressed in the club name, "GOOD FELLOWSHIP."

As a special feature the club runs a lunch room in the office building. This is self-supporting and saves those who patronize it from twenty to thirty cents a day.

We try to impress on all of our employees, that employment in our company is as good a place as they can find, if they are willing to work. "Turnover" in any business is one of the big items of expense. We have very little in our force.

In closing, let me say, we, like others, have found "The Big Party" is over, and if one wants to get business now, he must go after it. To realize that, is half the battle.

SUPPLY MEN! NOTICE!

The following letter from the Board of Directors of the Natural Gas Association of America addressed to the Association of Natural Gas Supply Men, has been received:

Pittsburg, Pa.

Mr. Fred A. Miller, President,
The Association of Natural Gas Supply Men,
Bradford, Pennsylvania.

Dear Sir:

Owing to the peculiar arrangement of the Convention Hall at Kansas City it will be necessary to hold the meetings of the Natural Gas Association of America in the Hall itself with a drop curtain separating the meeting room from the exhibits.

The Natural Gas Association deems it a duty they owe the Supply Men to hold their meetings in the same hall with the exhibits, but we are inconvenienced this year by not having a suitable meeting place in the same building, and the arrangement noted above is necessary.

Therefore, in view of the above stated fact, we must ask the Supply Men to kindly, either close their booths during the meetings of the Association, which will be held from 9:30 A. M. to 1:00 P. M., or remain quiet enough that the meetings will not be disturbed.

We hope you will give this earnest consideration, and insist that all of your members attend the meetings, on which so much effort has been spent by the officers of this Association, and give us your heartiest co-operation as you have always done in the past to make this convention a real success to the mutual benefit of both organizations.

Yours very truly,

THE NATURAL GAS ASSOCIATION
OF AMERICA.

Your co-operation in the above is earnestly solicited.

Too many men strike while the head is hot

Natural Gas Convention

Kansas City, Where the Association Was Born, the Meeting

Place May 15 - 17

We are looking forward with very great pleasure to being present at the Kansas City Convention of the Natural Gas Association of America. Had the convention been booked for any other city, we should have been equally glad to meet our old and new friends at whatever city might have been named, but we are especially glad of the opportunity to join with the others in helping to make the return to Kansas City a real home-coming. Why not call it "Old Home Week"? Such would, indeed, be an appropriate title.

We shall sadly miss our friend Kerr Murray Mitchell, who was one of the founders of the Association, and at that time was over the gas company at St. Joseph, Mo. However, though, Mr. Mitchell will not be in our midst as of old, we shall, nevertheless, feel that he is with us.

M. M. Sweetman of Kansas City, whose stalwart form, sonorous voice, persistent methods and fair judgment swung the convention to Kansas City, when the matter came up for decision last year at Cincinnati, was another of the founders of the organization, and we shall hear his voice, see his smiling face, and receive his hearty welcome when we go to Kansas City this month.

C. W. Sears, now General Manager of the East Ohio Gas Company, Cleveland, whose words should make any self-man proud when saying, as we have heard him say of himself, "I'm one of the roughnecks," is another of the handful who put the present association upon the map; and one of those who named it. Mr. Sears is among the very capable men in the industry, knows the business from the first stroke of the drill to the burning of gas in the appliance, and likewise is wise when it comes to the matter of meeting the public.

M. W. Walsh was another of the founders. He is now at Louisville, Ky., with that most clever gas-man, Donald MacDonald, though in those earlier years he was one of the far westerners, a man widely known as a producer of real and living badgers. Mr. Walsh, it will be remembered, sent two of these live creatures forward to Pittsburgh at the time the convention met in that city several years since. Then it was that the Chief of Police, and the Secretary of the Humane Society announced that a badger fight could not be held in Pittsburgh. A notable occasion, however, was pulled off. Walsh's badgers came out unscathed and were shipped back to Oklahoma, where they came from.

We would suggest that the founders of the Association receive some special attention at the time of the Kansas City meeting, since the organization owes its existence to them and will be celebrating its homecoming when at Kansas City. It would be entirely in keeping to have these gentlemen given places of special honor at the dinner, and they should be called upon for remarks. Such recognition would be very graceful on the part of those who have come into the association in more recent years, and who may have it in their power to see that recognition is accomplished.



KANSAS CITY BOARD OF TRADE

We are publishing an illustration of the Board of Trade of Kansas City, one of the very interesting spots in that big commercial center. It is of the Board of Trade that Mr. E. D. Bigelow, now eighty years of age, has been Secretary for many years, a man standing high in commercial circles in Kansas City.

Those who would like to take a peek at the coming and going of ownerships in grain, etc., should drop in and make themselves known at the Natural Gas Association of America.

The list of exhibitors up to our going to press is as follows:

Competition is the balance wheel which keeps business healthy

Bailey Meter Co., Cleveland.
 Bastian-Morley Co., La Porte, Ind.
 Bessemer Gas Engine Co., Grove City, Pa.
 Black, Sivalls & Bryson, Bartlesville, Okla.
 Bovaird & Seyfang Mfg. Co., Bradford, Pa.
 Bridgeport Machine Co., Augusta, Kansas.
 The Bristol Company, Waterbury, Conn.
 Bryant Heater & Mfg. Co., Cleveland.
 Chaplin-Fulton Mfg. Co., Pittsburgh, Pa.
 Geo. M. Clark & Co., Chicago.
 Cleveland Gas Meter Co., Cleveland.
 Continental Supply Co., St. Louis.
 C. and G. Cooper Co., Mt. Vernon, Ohio.
 Wm. M. Crane Co., New York
 Louis J. Cuneo, Gas & El. Co., St. Louis, Mo.
 The Becker Company, Newark, Ohio.
 Henry L. Doherty Co., New York.
 S. R. Dresser Mfg. Co., Bradford, Pa.
 Equitable Meter Co., Pittsburgh.
 Estate Stove Company, Hamilton, Ohio.
 The Foxboro Company, Foxboro, Mass.
 Frick & Lindsay Co., Pittsburgh.
 General Gas Light Co., Kalamazoo, Mich.
 Gilfillan Machine Co., Ebenezer, N. Y.
 Hays Mfg. Co., Erie, Pa.
 C. M. Heeter Sons & Co., Inc., Butler, Pa.
 Hewitt Rubber Company, Pittsburgh.
 Hope Engineering & Supply Co., Pittsburgh.
 Humphrey Co., Kalamazoo, Mich.
 Imperial Belting Co., Chicago.
 Jarecki Manufacturing Co., Pittsburgh.
 Jones & Laughlin Steel Co., Pittsburgh.
 Kansas City Gas Co., Kansas City.
 Koppers Company, Pittsburgh.
 A. Leschen & Sons Rope Co., St. Louis.
 Ludlow Valve Mfg. Co., Troy, N. Y.
 Lunkenheimer Company, Cincinnati
 Mark Mfg. Company, Chicago.
 S. M. Jones Company, Toledo.
 Metric Metal Works, Erie.
 Lee C. Moore & Co., Inc., Pittsburgh.
 H. Mueller Mfg. Co., Decatur, Ill.
 National Tube Co., Pittsburgh.
 New York Belting & Packing Co., New York.
 The "1900" Washer Co., Binghamton, N. Y.
 Oil & Gas Journal, Tulsa, Okla.
 Oil Well Supply Company, Pittsburgh.
 Parkersburg Rig & Reel Co., Parkersburg.
 Pittsburgh Meter Co., East Pittsburgh.
 Plymouth Cordage Co., North Plymouth, Mass.
 Reliable Stove Co., Cleveland.
 Republic Iron & Steel Co., Youngstown, Ohio.
 Reznor Mfg. Company, Mercer, Pa.
 George D. Roper Corp., Rockford, Ill.
 W. P. Taylor Co., Buffalo.
 Ruud Mfg. Co., Pittsburgh.
 Sprague Meter Co., Bridgeport, Conn.
 Superior Tube Co., Kansas City, Mo.
 United States Rubber Co., Pittsburgh.
 Welsbach Company, Gloucester City, N. J.
 Wico Electric Company, Springfield, Mass.

Scott Gas Appliance Co., Baltimore.
 Westinghouse Elec. & Mfg. Co., East Pittsburgh.
 Worthington Pump & Mch. Co., Buffalo.

CONVENTION PROGRAM

Monday, May 15th

Convention Hall Will Open Monday, 9:30 A. M.

Luncheon will be served free to all members wearing badges, starting promptly at 12 o'clock. Compliments of the Association of Natural Gas Supply Men.

MONDAY, 2 P. M.

Annual Meeting of the Supply Men's Association in the Balcony over the Main Entrance.

MONDAY, 5 P. M.

Annual Meeting of the Board of Directors of the Natural Gas Association of America at the Muehlebach Hotel, Mezzanine floor. Dinner served.

MONDAY, 8:15 P. M.

Special Smoker with boxing bouts and other entertainments at the Kansas City Athletic Club. Tickets for this will be given you when you register.

TUESDAY, 9:30 A. M.

Meeting of the Natural Gas Association of America in the Meeting Room at the rear of the Convention Hall.

Meeting called to order by the President, Mr. L. B. Denning, Pittsburgh, Pa.

Address of Welcome, Hon. Frank H. Cromwell, Mayor of Kansas City, Mo.

Response in Behalf of the Association, Karl C. Griffith, Dallas, Tex.

Address of the President.

In Memoriam—Report of the Memorials Committee, W. H. McKenzie, Chairman.

Report of the Board of Directors.

Report of the Treasurer.

Report of the Finance Committee.

Report of the Committee on New Members, G. F. Batchelor, Chairman.

"The Indeterminate Franchise," J. W. Dana, Kansas City, Mo.

Report of the Wrinkle Committee, W. R. Brown, Columbus, O., Chairman.

Report of the Committee on the Prevention of Waste, Jno. B. Corrin, Pittsburgh, Pa., Chairman.

Discussion—Production Problems, F. L. Chase, Dallas, Texas, Chairman.

"Telling the Public the Story," G. C. Maxwell, Cleveland, Ohio.

Luncheon will be served immediately after the meeting.

TUESDAY, 3:00 P. M.

American Association base ball

game. Tickets for this will be given you when you register.

WEDNESDAY, 9:30 A. M.

Meeting again called to order by the President.

Report of the Committee on Uniform Accounting, Geo. W. Ratcliffe, Pittsburgh, Pa., Chairman.

"Standardization in the Natural Gas Industry," H. C. Cooper, Pittsburgh, Pa.

Discussion—Transmission of Natural Gas, Burt R. Bay, Bartlesville, Okla., Chairman.

Discussion—Distribution of Natural Gas, F. F. Schauer, Pittsburgh, Pa., Chairman.

Report of the Joint Committee on Electrolysis, F. M. Towl, New York City, Chairman.

The annual picture of the convention will be taken in front of the Convention Hall immediately after adjournment of this meeting. Lunch will not be served until after the picture is taken, so there is no need for hurry.

WEDNESDAY, 6:15 P. M.

Seventeenth Annual Dinner to be held in the Pompeian Room of the Baltimore Hotel. Tickets, \$4.00 each.

THURSDAY, 9:30 A. M.

"What the Natural Gas Companies have been doing to help the Consumer get the greatest value from his Natural Gas Service," H. C. Morris, Dallas, Texas.

Discussion—Public Relations in the Natural Gas Industry, F. W. Stone, Ashtabula, O., Chairman.

H. H. Clark, Peoples Gas, Light & Coke Co., Chicago, Ill., will discuss the Progress Made on Industrial Gas Sales in the Manufactured Gas Business.

Report of the Committee on Standards, H. C. Cooper, Pittsburgh, Pa.; E. D. Leland, Pittsburgh, Pa.

Report of the Publicity Committee, H. J. Hoover, Cincinnati, O., Chairman.

Report of the Committee on President's Address.

Report of the Committee on Place of Meeting.

Report of the Committee on Nominations.

Election of Officers and Directors.

Report of Committee on Final Resolutions.

Adjournment.

FOLLOW DIRECTIONS FOR ONE AND ONE-HALF FARE

1. Tickets at the normal one-way fare for the going journey to Kansas City, Mo., may be bought on any of the following dates (but not on any other date), May 11th to 17th, inclusive. Half fare return trip.

2. Ask the ticket agent for a *certificate*. If it is impossible to get a *certificate* from the local ticket agent, a *receipt* will be satisfactory to be secured when ticket is purchased. Sign your name to the certificate or receipt in ink. Show this to the ticket agent.

3. Immediately on your arrival at the meeting, present your certificate to the endorsing officer, Wm. B. Way, Secretary, as the reduced fare for the return journey will not apply unless you are properly identified, as provided for by the certificate.

Mental ease is a full brother to physical laziness

AROUND THE BELT

New Wells, New Pipe Lines, New Contracts, Additions and Extensions. A Fund of Valuable News Gathered for the Journal Through Many Sources.

MADE PERSONALS

Charles C., who was formerly connected with the Oil Gas Company, Springfield, Ohio, is now engaged in the oil business, and making offices in Shreveport, La.

A. W., of Denver, Colo., was elected Vice of the American Association of Petroleum at the recent annual meeting of that organ-

arry, of the Commercial and Securities De-
partment Division, Oklahoma Gas & Elec-
tricity, has been elected president of the Lions
at city.

E. C., of Clarksburg, W. Va., Superintendent
of Natural Gas Company, is on the Board of
for engineers of the State of West Vir-

A. E. has resigned from the post of Asst.
troller of the Philadelphia Company, Pitts-

E. B. at the annual meeting of the Lone
company of Dallas, Texas, was re-elected
of that corporation.

W. W. has been re-elected Vice President
Indiana Gas & Electric Company, New York.
Philip C. at the annual meeting of the Gas
& Electric Company, New York City, was
elected and Chairman of the Board.

D. E. recently became Assistant to the
of the Philadelphia Company, Pittsburgh, Pa.
P. has been appointed to the Sales Depart-
ment Equitable Gas Company, Pittsburgh, Pa.
engineer.

V. P. E. has been elected Acting Treasurer
head of the Superior Meter Company, Brink-

G. W. has been elected President of the
ing Valley Oil & Gas Company, Clarksburg.

Arthur, Jr., who has been filling the post of
lent of Production of the Sinclair Oil & Gas
in South Texas territory, recently resigned.
John M., formerly in the Bond Department
Hellebush & Company, Chicago, and A. J.
have organized the firm of John M. Moter
with offices at 108 S. La Salle Street. Chi-
new concern will conduct a general business
in unlisted securities.

cars of the Roxana Petroleum Corporation.
ected President of the Okmulgee Geological

Smith, F. B., Assistant to the General Auditor, Okla-
homa Gas & Electric Company, has been chosen
Chairman of the National Electric Light Association
Committee on Accounting Service for Member Com-
panies.

Smith, H. E., formerly Industrial Engineer of the
Equitable Gas Company, Pittsburgh, Pa., is now Gen-
eral Foreman of the Allegheny Heating Company of
the same city.

Varner, Dr. H. A., at the organization meeting of the
Little Hocking Valley Oil & Gas Company, Clarksburg,
West Virginia, was elected Vice-President.

Weather, Dr. W. E., of Dallas, Texas, is the new
President of the American Association of Petroleum
Geologists.

DECEASED

Algeo, John F., Superintendent for the Sinclair Oil
& Gas Company in its Cowington, Okla. district, died
recently at his home in Tulsa, Okla., at the age of sixty-
one years.

Mohrard, W. R., former Vice President and General
Manager of the Oklahoma Gas & Electric Company,
Oklahoma City, died recently at his home in Concord,
Cal.

ELECTED

NEW YORK. New York City. At the annual meet-
ing of shareholders of the Columbia Gas & Electric
Company, E. L. Clarke, President of the American
Exchange National Bank, Marshall Field & Marshall
Field, Elmer Ward & Company, J. W. Harriman, Presi-
dent of the Harriman National Bank, and Har-
ley, Vice President of the Guaranty Trust Company of
New York, were elected directors of the Columbia Gas
& Electric Company. Other directors were re-elected.

TEXAS. Dallas. At the annual meeting of the
stockholders of the Lone Star Gas Company, directors
were elected as follows: E. B. Downing, A. B. Flannery,
M. W. Mahan, F. E. Chase and R. A. Crawford. Officers
elected by the directors are: E. B. Downing, President;
R. A. Crawford, First Vice-President and General Man-
ager; M. W. Mahan, Second Vice-President; E. L.
Cobb, Secretary and Treasurer; F. E. Chase, Operating
Manager; K. E. Griffith, General Attorney; H. A. Luck-
son, Assistant Secretary and Treasurer; H. C. Con-
stantin, Assistant Secretary and Treasurer; E. E. Dyer,
Assistant Treasurer, and E. J. O'Brien, Assistant Secretary.

One of the best things a salesman can learn is how to make a long story short.

ITEMS OF FINANCE

CALIFORNIA—*Los Angeles*—The Midway Gas Company reports earnings of \$2,619,241 for the year 1921, an increase of \$448,294 over the year previous.

OKLAHOMA—*Okmulgee*—A cash dividend of 25 per cent has been declared by the Independent Oil & Gas Company. The company has large production in the Lyons Pool, Okfuskee County.

WEST VIRGINIA—*Charleston*—The Green River Gas Company has been authorized to decrease its capital stock from \$500,000 to \$300,000.

INCORPORATED

INDIANA—*Kokomo*—The Ruby Oil & Gas Company has been organized with a capital stock of \$30,000. Those named as incorporators are: W. M. Conwell, John Souder and A. Albrecht.

OHIO—*Matamoras*—The High Pressure Gas Company has been incorporated under the laws of this state with a capital of \$100,000. The incorporators are C. A. Amos, W. E. Kollman, Fred N. Stover, H. C. Roe and J. H. Lauffer.

SOUTH CAROLINA—*Charleston*—The Bolan Oil & Gas Company has been incorporated in this city with a capital stock of \$128,000. Among the incorporators are Cornelius A. Cole, Hackensack, N. J.; Arthur A. Oakley, Pearl River, N. Y., and William E. Shields, Jr., Staten Island, N. Y.

WEST VIRGINIA—*Charleston*—The Virginia Gasoline & Oil Company has been incorporated with a capitalization of \$1,000,000. The incorporators are: H. A. Wallace, L. A. Seyffert, R. G. Altizer, R. C. Rowan and Bert Adams.

The Reed Oil & Gas Company has been organized by C. D. Reed, Ruth Reed, C. J. Bumpus, W. B. Hoy and F. H. Brazie, all of this city. The new concern has a capital stock of \$50,000.

The West Virginia Gas & Petroleum Company has been formed with a capital of \$100,000. Those named as incorporators are: William D. Smith, Homer A. Price, Robert E. Davis, Charles W. Heasley, Parkersburg; George W. Smith, Weston.

Parkersburg—The Luden Oil & Gas Company has been incorporated with a capital stock of \$50,000. Among those interested in the new concern are: John Miller, Mason; E. C. Wheeler, John C. Wheeler, Parkersburg; J. W. Martin, Mabel V. Martin, Gallipolis Ferry, W. Va.

Clarksburg—The Little Hocking Valley Oil & Gas Company has been incorporated, and officers as follows elected: G. W. McQuain, President; Dr. H. V. Varner, Vice-President; R. L. Fetty, Secretary and Treasurer, and J. C. Yost and A. R. Kincaid. Prior to the incorporation, the company was a partnership. The new concern will take over all of the leases owned by the old company and will proceed at an early date to drill wells on leases located on Little Hocking, Washington County, Ohio.

PER CUBIC FOOT—RATES

NEW YORK—*Batavia*—The Republic Light, Heat & Power Company has been granted permission by the New York State Public Service Commission to increase its rate 15 cents per thousand. This brings the rate up to 70 cents per thousand.

Watertown—A rate of 70 cents per thousand will be charged in future by Republic Light, Heat & Power Company by permission of the State Public Service Commission. The former rate was 55 cents per thousand.

PENNSYLVANIA—*Greensboro*—An increase in rates from 53 cents to 50 cents per thousand has been announced by the Greensboro Gas Company in Fayette, Green, Washington and Westmoreland counties.

TEXAS—*San Angelo*—The Amarillo Gas Company is seeking a gas franchise in this city, names rates from 35 to 40 cents per thousand in the agreement as drawn up.

NEW FRANCHISES

KANSAS—*Liberal*—A gas franchise has been granted M. V. McQuigg and associates. It is proposed to distribute under the franchise the gas yield of a 10,000,000-cubic foot well located near the city, and owned by the McQuigg interests. It is said that new test drilling is now under way.

NEW YORK—*Nunda*—The Orleans Oil & Gas Company has been granted a fifty-year franchise under which it will supply natural gas in this city for domestic and commercial purposes.

OKLAHOMA—*Okemah*—The Holdenville Gas Company has been granted a franchise under which the company will distribute natural gas in this city.

TEXAS—*San Angelo*—The Amarillo Gas Company is seeking a franchise in this city, to cover a period of twenty years. Under the franchise, the city is to subscribe \$35,000 of the capital stock. The rates named are 35 to 40 cents per thousand. The company would

Put off until tomorrow only the things you should not do at all

to supply them the gas fields in the Panhandle

GENERAL

KANSAS *Increases*—The El Dorado Gas Company, No. 1 well on the Gashly lease, section 4, reports a production of 10,000,000 cubic feet, or about 50 to 100 barrels of oil.

Oilfield Develops. A shale oil plant is being built at a point fourteen miles north of this city. Capacity of the plant is 100 barrels a day, and cost \$500,000 to construct. It is called the Teles shale oil plant. The project is promoted by Colorado eastern capitalists. The plant operates on the process employing the Brown retort. The manager of the process is Harry J. Brown of New York.

USACE CIVIL ENGINEERING: L. B. Slack of
USACE has completed in the Tonkawa field
100 ft. test gasser at a depth of 822 feet.

FACTS.—Reliable sources inform us that a letter which reached our editorial department to report that the use of natural gas for the purpose of manufacturing carbon black has been prohibited by the state legislature is erroneous. The facts are that a bill prohibiting the manufacture of carbon black in certain localities of the state passed the legislature, but this bill was vetoed by the governor. Consequently the industry manufacturing carbon black from natural gas has not suffered curtailment.

ST. ANNA, Massachusetts—A six-inch pipe line is constructed by A. C. Colaswell and associates from the Colaswell Company's gasser on the Mayfield farm, about a distance of eleven miles. The output from the gas well has been contracted for by Colaswell.

NOTE: *See Appendix 1.* All figures are rounded to the nearest integer. The figures in parentheses represent expenditures in the sample year of the respective country, since the value of the price index is 100.

As a result, the American Fuel & Oil Company reported this morning the finding of twenty well sites in the company's Newell #1 1000000-acre prospect, completely leased by the company.

Production: The original Krum Company has been a very good customer of the McCosnell Farms near as well as the output of the well has been used by the Oil and Fuel Supply Company.

Keweenaw. The Swingle Oil & Gas Company about to test on the Harropps farm in Birch Creek township and has a good production. The output of the well will be piped to Keweenaw. According to report, a number of new locations have been made in this field and the water will be more richly tested and developed.

OKLAHOMA According to a decision by the Supreme Court in rate matters pertaining to the State of Oklahoma, the price of natural gas is to be regulated by the State according to a formula which is to be delivered.

Crack Cocaine: While 17 bags of cocaine in Bontoc district have completed a good season, there is still the Sager problem, with 14 bags being off-gas in the Davao area and 203 bags.

The Pioneer Oil & Gas Company, Inc. No. 1 on the White tract in the 23rd Twp. has a good gas well 2,000 feet. Production was reached in the December and

Hughes and his son and associates claim that their well on the Seawall State Section 17-04-01 gas field (0001) within feet of gas at 1,800 feet. At 1,915 feet the well developed salt water.

Any County No. 1 District, McHenry, A. W. White
on the Motor property value of \$10000.00 and a
at \$15.50 per 100. The license is \$4.25 per

104 Carter, 1, cont. The 1990-1991 contract for the same party has completed a \$1,500,000 debt being passed on to Hindu family, see p. 20, 10-1-91.

McCarthy and Co., Inc. is the only company in the country to offer the complete set of the McGraw-Hill Financial Planning Series. A Division of McGraw-Hill, the company has been in business since 1924. It is the acquiring of shares of the company's 7 per cent preferred stock by monthly payments. Officers are: H. E. Jones, President; J. B. Smith, Secretary; Louis McCarthy, Treasurer; Directors: A. A. Brown, W. B. Lawrence, and J. E. Green. The company is organized with seventy charter members.

His presence at the Supreme Court was reported by the Washington National Post as "a little unusual" and further "was generally regarded as a surprise" although during the winter of 1941, in the months immediately preceding the summer of 1942, he was at the time

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1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 26

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He who takes good care of the present, need never worry about the future

PENNSYLVANIA—Claysville—On the Elmer Martin farm, Coon Island, the West Virginia Natural Gas Company has completed a light gasser.

Greene County—The Griffith Oil & Gas Company at their test on the Griffith farm, Springhill township, has completed a well estimated to have production of more than 2,000,000 cubic feet.

Greenburg—It is reported that the Duff Gas Company of Pittsburgh has filed leases on more than 2,000 acres in Salem township at a point near Harvey's Five Points. The initial well is to be drilled on the Mack Frye farm.

Pittsburgh—A merger has been effected by which the Arkansas Gas Company has taken over the Plymouth Oil & Gas Company, the Benedum Trees Oil Company, and the Little Prairie Oil & Gas Company. Four hundred and six producing wells and as well considerable undeveloped acreage are part of the property acquired.

Redd's Mill—A good flow of gas has been developed by the Greensboro Natural Gas Company on the Frank Johoskey farm at a depth of 1,700 feet.

The Monongahela Bellewood Gas Company is reported to have developed a flow of gas in a drilling on the McMillan farm. The gas was found at a depth of 1,000 feet, the drill penetrating several veins of coal.

Washington County—In Caton township, Hughes & Day's test on the Dr. George Kelly farm is reported a good gasser in the fourth and fifth sands.

In South Franklin township, the Dunn-Orville Oil Company has drilled No. 4 on the Adam Weir farm through the Big Injun sand. It is a fair gasser in that formation.

In the same district, the Carnegie Natural Gas Company is due in the sand at a test on the S. A. Dague farm.

TEXAS—Carthage—No. 1 of the Bethany Oil & Gas Company on the Gulley tract, after being abandoned some weeks ago when the casing was shot off at 1,900 feet, has "blown itself in" and is reported to be yielding 6,000,000 cubic feet of dry gas. This well extends the shallow gas field a distance of three miles southeast from proven territory.

The Texas Company has completed a 20,000,000-cubic foot gasser in this district. The well came in at a depth of 1,900 feet.

Dallas—The Lone Star Gas Company has let contracts covering the installation of thirty gas compressors in the several fields in which the company operates.

Three Rivers—The Three Rivers Production Company has let the contract for the construction of a pipe line from the Reagen well into this city, a distance of four miles.

Webb County—The Carolina-Texas Oil Company has brought in No. 1 on the Barnesley property, and reports a gasser estimated at 25,000,000 cubic feet. The location is eight miles north of Torrecillas.

Wichita County—The Gulf Company in its first test on the Burk Burnett farm, is reported to have completed a gasser of 60,000,000 feet capacity in the 2,000-foot sand.

Wortham—The Texiana Company is reported to have a gasser on the Wright farm, two miles distant from town, yielding 5,000,000 cubic feet of gas from a depth of 1,300 feet.

Young County—The Hobbs-Haskell oil interests have completed a 16,000,000-foot gasser on the J. J. Scott tract, South Bend townsite. The gas was drilled into at a depth of 3,500 feet. The product of the well has been contracted for by the Ranger Oil Company.

Zapata County—The Zapata-Memphis Oil Syndicate has completed its No. 1 well, some distance from Mirando City, Mirando district, and reports a 4,000,000-foot flow.

WEST VIRGINIA—Braxton County—The West Virginia Dome Oil & Gas Company's test in Otter district is a light gasser in the salt sand.

The Lewis Development Company has completed a light gasser in the Big Injun sand in its location on the Singleton farm, Salt Lick district.

Calhoun County—In Washington district, the Hope Natural Gas Company's test on the E. C. Knotts farm is dry and abandoned.

In Washington district, Norris & Company's test on the Nancy Jarvis farm has developed a light show of oil and gas in the salt sand.

Doddridge County—Gassers outnumber the oil producers in the late completed list in West Virginia.

In West Union district, the Columbian Carbon Company got a fair gasser in the Big Injun sand at No. 43 on the Lewis Maxwell tract.

Gilmer County—A production of 168,000 cubic feet of gas was reported on the completion of the Mary C. Henderson No. 1 well being drilled by the Gilmer Oil & Gas Company in Center district. The depth of the well is 2,637 feet.

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Harrison County. In Sardis district, the Deiva Lumber Company has drilled the No. 2 well on the Thomas E. Backus farm through the Gordon sand, and it is a duster in that formation. It will make a big gasser in the 50 foot sand. This well was drilled to a total depth of 2,973 feet.

Jackson County. On the Ohio river, near Polk station, Grant district, the Carter Oil Company has completed in the Berea grit its test, a semi wildcat, on the D. DeWitt farm. No oil was found in this well, but has a gas pressure in the Berea grit estimated at 1000 cubic feet a day.

Kanawha County. In Peytona district, the Columbian Carbon Company has a 50,000 foot gasser in the Berea grit at a test on the E. A. and E. H. Hudson farm.

The Peerless Carbon Company on Leatherwood creek, in Sardis district, in their No. 5 on the James D. White farm have completed a good gasser. This company has tested its No. 6 on the same tract.

Lewis County. In Carroll district, the Cambridge Carbon Company got a 3,000,000-foot gas well in the Berea sand at a test on the Thomas Ray farm.

In Carroll district, the Huntington Gas and Development Company has a gasser in the Big Injun sand at a test on the Marine Johnson farm.

Marion County. In Paw Paw district, the Owens Petroleum & Machine Company has now drilled its gasser on the Charles O. Floyd farm through the Big Injun sand.

Marshall County. In Liberty district, the Marshall Petroleum Oil & Gas Company's test on the Susanna Gray farm is a gasser in the Big Injun sand.

McKean County. A good gasser has been completed by E. N. Rinehart at his test on the B. C. Brown farm. A gas was found in the Maxon sand.

In Clay district, Yates, Flanagan & Company have a Big Injun sand gasser at a second test on the William Miller farm.

In Murphy district, H. H. Satterfield has rigged up a drill on the J. W. Grim farm.

In Union district, the Carnegie Natural Gas Company has started to drill a test on the E. M. Boyer farm.

Sumner County. In Curtis district, the United Fuel & Gas Company has a gasser in the Berea grit at a test on the T. W. Fields farm.

Tazewell County. In Burning Springs district, on the Straight Fork, Harry P. Camden has completed the first well on the Newton Kemp farm and has made a gas well.

Wood County. The Hudson Oil Company's test on the Hugh Berry farm is reported a light gasser in the Berea sand.

ONTARIO, Toronto. It is reported that according to an act of legislation, government control of natural gas in Western Ontario will be abandoned.

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Plymouth Cordage Co., N. Plymouth, Mass.
Pratt & Cady Co., Inc., Hartford, Conn.
Precision Instrument Co., Newark, N. J.
Pritchard Supply Co., Mannington, W. Va.

Rathbone, Sard & Co., Aurora, Ill.
Rathbun-Jones Eng. Co., Toledo.
Reid, Jos., Gas Engine Co., Oil City, Pa.
Rensselaer Valve Co., Pittsburgh, Pa.
Reliable Stove Co., Cleveland.
Republic Iron & Steel Co., Youngstown, O.
Republic Rubber Co., Youngstown, Ohio.
Republic Supply Co., Houston, Tex.
Reznor Mfg. Co., Mercer, Pa.
Riesenman Mfg. Co., Ltd., Franklin, Pa.
Robbins Publ. Co., New York.
Robinson Packer Co., Tulsa, Okla.
Roebbling, John A. Sons Co., Trenton, N. J.
Geo. D. Ruer Corp., Rockford, Ill.
Rossendale-Reddaway Belt'g & Hose Co., Newark, N. J.
Ruud Mfg. Co., Pittsburgh.

Safety Gas Stove Lock Co., Nashville, Tenn.
Sands Mfg. Co., Cleveland.
Scott Gas Appl. Co., Washington, D. C.
Spang, Chas. & Co., Pittsburgh.
Sprague Meter Co., Bridgeport, Conn.
Stacey Mfg. Co., Cincinnati.
Stitt Ignition Co., Columbus.
Stokes Deep Well Co., Shreveport, La.
Strause Gas Iron Co., Philadelphia.
Superior Tube Co., Kansas City, Mo.

Taylor, W. P. Co., Buffalo.
Toledo Pipe Thr'd'g Mach. Co., Toledo, O.

Union Rubber & Asbestos Co., Trenton, N. J.
United Seal Co., Columbus.
Upson-Walton Co., Cleveland, O.
U. S. Rubber Co., New York.

Walker & Pratt Mfg. Co., Boston, Mass.
Welsbach Co., Gloucester City, N. J.
Westcott Valve Co., Seneca Falls, N. Y.
Westinghouse Elec. & Mfg. Co., Pittsburgh.
Wheeling Steel Products Co., Wheeling, W. Va.
Williams Tool Co., Erie.
Witman & Co., Columbus.
Williamsport Wire Rope Co., Williamsport, Pa.
Worthington Pump & Mach. Corp., Buffalo.

Yorke Derrick Co., Washington, Pa.
Youngtown Sheet & Tube Co., Youngtown, O.
Young, Wm. T. Drilling Eng. Co., Oil City.

ANNUAL CONVENTION NATURAL GAS ASSOCIATION OF AMERICA
and EXHIBITION OF SUPPLY MEN'S ASSOCIATION
Louisville, Ky., - 1923

FROM THE EDITORIAL MAIL BAG

DISTANCE LENDS ENCHANTMENT TO THE WETS

FROM the tone of the following paragraphs, the editor of a gas contemporary across the ocean must have among his exchanges from the U. S. some house organ of the "wets" in America.

At a distance, things when exploited for the benefit of some story-monger are like the tiny movie picture magnified many times in order to make it effective. It's rather amusing to read these paragraphs.

We had not learned over here that the water heater manufacturers of the United States had converted their cable organizations and factories into still coal product enterprises for the supplying of plumbers with "still" necessities, nor that our plumbers had departed from the ways of lawfully upholding the Constitution of the United States of America.

There are always some black sheep, however, the daily press, the propagandists and the junk heaps notwithstanding. Americans as a people are loyal to their country and its laws.

Here are these word-cartoons:

There is a lot of old junk lying about most American towns in the shape of ancient coal ranges and obsolescent gas cookers and gas fires. The Citizen's Gas Light Company of Quincy, Massachusetts, conceived a plan to get rid of the collection in that community. In order to discover the oldest coal and gas ranges they offered a prize of a \$50 new gas range. Each competitor had to send in a signed form, and this provided the company with a splendid mailing list. The manager was astounded but enraptured. He had never imagined that there was so much ancient scrap in Quincy.

• • • • •

Then the Citizen's salesman discreetly descended on the owners of the old junk, and after peaceful penetration into the houses the real work began. The advantages of new, up-to-date appliances were explained, an offer was made to exchange new lamps for old, an allowance based on the value of the equipment replaced being made. The scheme was well advertised. A top drawer was a free gift with each range. This novel enterprise has not yet reached its conclusion, but all Quincy is talking about the competition, and the Citizen's salesmen are having the time of their lives.

• • • • •

Prohibition in the United States has proved a fine bit of legislation for the Seattle plumbers. People cannot go drinking in the saloon bar, as in the old days of free time, so they have to contrive and make their own. And some of them have become mighty clever at the job. But the plumbers, they will soon rival Henry

Ford and the Astors in wealth, because every copper coin for gas heaters they can make or import is snapped up by some thirsty man who has resolved on installing an akedoh, still in his own back kitchen. These gentlemen are called moonshiners, why it is not easy to understand, except on the principle that they work in the dark and dodge the moonshine.

• • • • •

Last year, when Pussycat Johnson's brigade was on the rampage there was a healthy business in gas heater coal in the Seattle district. The master plumbers saw that their lucky star was in the ascendant and they gathered in a rich harvest by charging more for the copper coal than for the coal and gas heater combined. So great was the public demand for coals that one store was burgled and fifty transferred for duty in one night. This was all very dreadful and very much upset the cranks who were insistent on dry Seattle, but worse was to come.

• • • • •

An ingenious master plumber with a magician's cave on the outskirts of Seattle conceived the idea of extending his business for the accommodation of the thirsty ones. He not only sold copper coals, but he made a complete still and had a recipe for making a good home brew. He stored for sale packages of hops, barley, rice and liquid malt, and these were made up in portions suitable to the amount of leverage required in one brew. Nothing could be more convenient for the opponents of Prohibition, and all in the name of gas. Truly, gas is a marvellous power in the human economy.

GASES FOR HIGH SULPHUR CRUDE OIL

THE American Petroleum Institute, U. S. Bureau of Mines and the Public Health Service have entered into a cooperative agreement which provides for an investigation of petroleum gas poisoning from crude oils of a high sulphur content. Deaths and physical injuries have resulted to the workmen exposed to the vapors and gases from some of these crude oils. It has been found that some of these products have a toxic and toxic effect and cause conjunctivitis and dermatitis to the workmen. The constituents of the gases are not definitely known except that hydrogen sulphide is present. The other constituents have not been isolated but the investigation is being continued at which these vapors and gases become dangerous.

The purpose of the work is to determine the amount of

hydrogen sulphide in the mixture of gases from actual crude oils. The study is the various methods of measuring the concentration of the gases from these

Believe this: The best opportunities are of the home-made variety

gases both at the wells, refineries and storage tanks, and from stills; collection of data relative to accidents; and analysis of gases and methods of analysis.

2. Investigation of the relation of causes of conjunctivitis to causes of other accidents relating to crude oil gases.

3. Study of gases:

a. Collection of samples.

1. At wells.
2. From ships.
3. From storage tanks.
4. From stills.

b. Laboratory investigation.

1. Distillation of the crude oil.

- a. By vacuum.
- b. By low temperature.
- c. Collection of distillates.

1. By absorption.

- a. Solid absorbents.
- b. Liquid air.

c. Analysis of gases.

1. From field samples.
2. From collected distillates.

d. Physiological and pathological effects of the gases

1. On animals.
2. On men, as obtained from field work.

4. Protective measures.

- a. Rules for self-protection.
- b. Gas mask.
- c. Self-contained breathing apparatus.
- d. Other means of protection.

5. Treatment.

- a. First-aid or emergency.
- b. Curative.
 1. Medicinal.
 2. After.

As the investigations and experiments proceed, changes in the foregoing outline may be necessary.

LOCATING OF GAS PIPE

AT a meeting held across the water under recent date, Mr. C. H. Webb, of Stourbridge, England, told a very interesting story of a "pipe locator", to the members of the Midland Association of Gas Engineers and Managers then in session. Mr. Webb, according to "The Gas Engineer", describes the matter as follows:

"The device consists of a battery of dry cells, or an accumulator, whichever might be preferred. Dry cells are erratic in their action, and do not give much power, so that an accumulator, especially in the case of works with generating plant, is very convenient. The battery is connected to the primary circuit of a special induc-

tion coil, and in addition there is a pair of telephone receivers connected to the listening coil. Wires from the secondary circuit of the induction coil are connected up in any convenient way to cause a current to flow through the pipes to be located underground. For instance, if it is the service pipe from the main to a house the secondary circuit of the induction coil would be connected to the meter inlet on one terminal and from the other terminal a loose ground wire would be run, say to an adjacent lamp post, or possibly to the meter of the next house. On starting the primary current the secondary current is induced and flowed through the circuit formed from the gas meter, along the service pipe, along the main to the lamp post and back, through the loose ground wire. The area so described forms a field with a current flowing all around it. The operator now takes the listening coil, which is a light coil laid on a wooden frame, in his hands, and places the two telephone receivers on his ears, which receivers are in circuit with the coil, if he then stands in the field current is induced in the coil which he carries and a similar buzzing to that given by the interrupter of the induction coil is heard through the telephone receivers. As soon as the portable coil comes over the edge of the field the buzzing a weaker sound. By this means the track of the service outside the field, the buzzing recommences, but has quite is no longer heard. If it is carried further and taken vice pipe can be traced exactly.

When in use the operator takes up a position where he is more or less certain that he is in the field and then moves until he notices a difference in the tone of the buzzing. He is then over one of the boundaries of the field, either the ground wire or the underground pipe. It is usually convenient to go to the ground wire to make sure that the circuit is well established. He can then move across the field until the difference in sound is detected, when he knows that he is over the desired pipe. He then swings the coil from side to side across the pipe, and at the same time walks backwards, tracing the track of the pipe on the ground with his foot.

The whole apparatus is extremely simple, and anyone can learn to use it in the course of half-an-hour; but, of course, with greater practice one can gain speed and experience in interpreting the sounds through the telephone receivers. The outfit as received from the makers is packed in a small box weighing about 20 lb. To the equipment has been added another box with about 110 yards of 3.22 cab tyre sheath-cable wound in a drum, the inner end of the wire being connected through the axle to a terminal on the outside of the box, so that when laying the ground wire all that is necessary is to place this box near the wireless box, connect a secondary terminal of the induction coil to that of the axle of the cable box, and run out sufficient cable from the box to make the necessary connection.

The particular apparatus in use is of American origin, but there is also an English made article on the market. The apparatus gives astonishing results, is in frequent use, and has saved many times its cost."

Take this: A firm interest in your firm's interests.

Natural Gas Convention

*Kansas City Again Proves Popular as Meeting Place for
Natural Gas Men*

FOR a year past we have had our eye on the date and place of the convention of the Natural Gas Association of America which was scheduled for Kansas City, May 15th-18th.

It was years ago that the convention last met in Kansas City and the western interests felt it most desirable that the meeting be held in the west this year, not necessarily with an idea that turn-about the conventions should be held east and in the west, but that the west ought have a western manifestation, and the opportunity for a shorter railway trip, thus enabling more of the western men to be present at the convention than could possibly be with the meeting held in the east.

It has been decided to hold the next meeting in Louisville, Ky., thus to swing around the circle toward the east where undoubtedly the meeting will be held in 1924.

Mr. E. B. Denning has made a most excellent program and his plans for papers and discussions were well mapped out, the only difficulty being that in some instances the chairmen having in charge certain discussions had not found it possible in advance of the meeting to advise what their several followers would present in the way of discussions, therefore in several presentations there was really much duplication, and the time thus was shortened which might well have been used in other directions.

The list of papers and discussions appearing on the official program were as follows:

The Indianapolis Production.
J. V. Potts, Kansas City, Mo.

Report of the Warble Committee
to H. B. Brown, Columbus, O.
Chairman.

Report of the Committee on the
Production of Water, Joe B. Carr,
St. Paul, Pa., Chairman.

Reservoir Production Prob-
lems, F. L. Chen, Dallas, Texas,
Chairman.

Taking the Public the Story—
C. J. Shewell, Cleveland, Ohio.

What the Natural Gas Com-
mission has been doing to help the
industry get the greatest value
from its natural gas service, H.
C. Brown, Dallas, Texas.

Reservoir Public Relations in
the Natural Gas Industry, F. W.
Brown, Columbus, O., Chairman.

E. B. Carr, Peoples Gas, Light
& Coke Co., Chicago, Ill., Program

Made on Industrial Gas Sales to the
Manufactured Gas Industry.

Report of the Committee on Ex-
treme Armament, Gen. W. B. Bostick,
Pittsburgh, Pa., Chairman.

Standardization in the Natural
Gas Industry, H. C. Cooper, Pitts-
burgh, Pa.

Transmission Transmission of Nat-
ural Gas, Bert B. Ray, Northville,
Mich., Chairman.

Transmission Distribution of Nat-
ural Gas, F. F. Schaefer, Pitts-
burgh, Pa., Chairman.

Report of the Joint Committee
on Hydrogen, F. M. Teal, New
York City, Chairman.

Report of the Committee on
Standards, H. C. Cooper, Pitts-
burgh, Pa., E. D. Ireland, Pitts-
burgh, Pa.

Report of the Publishing Com-
mittee, H. J. Hunter, Charleston, O.
Chairman.

The sessions were held throughout the 16th and 17th, and the morning of the 18th, while the exhibition was open for the consideration of gas-men Monday morning the 15th, and remained open until noon of the 18th when the dismantling process was taken in hand by the exhibitors.

The exhibits were in many respects the same of course with variations that have been shown upon former occasions when they have been quite extensively reviewed in our columns, therefore to now tell of these in detail would be largely to duplicate what we have before recounted in connection with the shows of the Natural Gas Supply Men's Association.

There were several more exhibits of gas burning appliances than have appeared at former meetings, thus indicating a trend on the part of the industry toward natural gas companies handling gas appliances, but the time, however, will never come when the merchant will not be a large factor in the field of sales, so long as gas appliances find a market and that time we realize is practically unlimited in view of the fact that as by degrees natural gas diminishes in volume, manufactured gas will become its successor.

We shall publish various of the papers presented at the convention sessions, also the president's address and such other matter as is available. These offerings we know will prove of much interest to our readers.

A large curtain was stretched across one end of the auditorium, thus the exhibits were separated from the meeting quarters, but only by the curtain making it necessary that as little noise as possible be created on the exhibition side of this dividing line while the sessions were in order.

As at Cincinnati a year since when the association met within the gates of that municipality, various of the gas appliance manufacturers presented wares that were subsequently given away to the public attending the exhibition from 1 o'clock in the afternoon until 10 o'clock in the evening. Drawings were held every half hour only, however, while the audience was made up of towns people.

The admission to Exhibitors' Hall was free, to all, each person receiving a ticket at the door bearing a number, the duplicate of which was placed in a receptacle preparatory to the drawings that as we have said took place each half hour while the city festival was present, thus when the public of Kansas City became

Keep these. Your word, your temper and your friends

aware of the free gift idea, the audience increased in volume until toward the last of the several days' display the attendance was very large.

The Supply Men furnished luncheons on Monday, Tuesday and Wednesday. These were stand-up affairs and made it possible for gas company representatives to spend the entire day at the hall rather than to break away between morning and afternoon sessions by having to go to a distance for luncheon. This is a plan that has pertained at these conventions for years.

We were exceedingly fortunate in that every day was a bright, cheerful, sunny day, with the exception of but one whereon clouds made themselves strikingly manifest, and for two or three hours there was a sprinkle. Showers, however, appeared but once during the entire period of the convention.

Kansas City is an exceedingly well situated western city, and its interests are indeed varied in number and in fields covered. We look back upon our stay in that city with much pleasure, and we would extend a hearty vote of thanks to our Kansas City and western friends for their most excellent care of those who attended the meeting.

Much credit was due to the local committees having in charge the general matters surrounding a convention. The following well described the situation in the exact words of Mr. Dan C. Hayne, Chief Engineer of the Kansas City Gas Company:

"Mr. W. H. McKenzie was appointed General Chairman of a Local Committee to assist the Secretary and Board of Directors in making arrangements for the Convention in Kansas City. Mr. Frank Carpenter, auditor and assistant secretary of the Kansas City Gas Company, was placed in charge of entertainment, and Mr. Dan C. Hayne, Chief Engineer of the Kansas City and Wyandotte County Gas Companies, was placed in charge of the arrangements at Convention Hall. These three (3) appointments were made by Mr. Wm. B. Way, Secretary of the Natural Gas Association of America.

The work of entertainment, which was under Mr. Carpenter's direction, was ably brought about through the assistance of Mr. Paul C. Ford, Chief Clerk of the Kansas City Gas Company, and Mr. Frank Land, Assistant General Bookkeeper of the Kansas City Gas Company, along with various foremen and employees of the Kansas City and Wyandotte County Gas Companies, sold banquet tickets.

Mr. Hayne was assisted in his work by Mr. C. H. Waring and Mr. W. M. Wood, assistant engineers of the Kansas City and Wyandotte County Gas Companies, and the actual work of installing the exhibits was handled under the jurisdiction of Mr. Charles Holmgren, appliance foreman of the Kansas City Gas Company, assisted by R. R. Johnson, shop foreman of the Wyandotte County Gas Company, and Mr. Benj. Stockton, fitter foreman of the Kansas City Gas Company.

The warehouse and hauling arrangements of getting the exhibits into the building and getting them back to the owners was handled by Mr. Way direct, through

a contract entered into with Grant Renne, heavy hauling contractor of Kansas City.

The expense of the gas and water piping was absorbed by the Kansas City Gas Company as a part of their contribution toward the success of the Convention.

The entire supervisory and commercial force of both companies were available and were used from time to time when needed, during the period of the Convention.

The man ordinarily used by Mr. Way in charge of the appliances given to the public, by means of drawings, was unable to attend the Convention, and Mr. Hayne agreed to take care of this work for Mr. Way, in addition to his other duties as an eleventh-hour proposition, and was assisted to a great extent by Mr. N. McManamy, Sales Manager of the Kansas City Gas Company, and Mr. W. ReBrown, editor of *Natural Gas*.

From the letters of commendation and appreciation which we have already received, we feel sure that the Convention was a success and that our visitors enjoyed themselves while they were in Kansas City.

In this connection, due credit must be given Mr. Geo. E. Nicholson, President of the Kansas City and Wyandotte County Gas Companies, and Mr. C. W. Green, Vice-President and General Manager of the Kansas City Gas Company, as well as Mr. W. H. McKenzie, General Manager of the Wyandotte County Gas Company, for it was through liberality on their part which enabled the two (2) forces to be available for use in making the Convention a success."

The western supplies and equipment manufacturers turned out well, and helped to swell the volume and variety of exhibits shown, while the western gas interests were liberal in their sending of men, in fact the east and the west both sought to do their utmost to make the affair an interesting and profitable one. Our friend, M. W. Walsh, promises us that the affair next year at Louisville, Ky., will keep up the record of these years past which has been that of well planned and well carried-out conventions and exhibitions. The President's address follows:

PRESIDENT'S ADDRESS

L. B. DENNING

I CONGRATULATE the members of the Natural Gas Association of America and of the Supply Men's Association upon being permitted to hold this, the Seventeenth Annual Convention of the Natural Gas Association of America, in this beautiful city, which has been so well named "The Heart of America." Having attended the last meeting of this Association held in Kansas City some years ago, I have personal knowledge of the great hearted hospitality of its citizens and the aggressive spirit of accomplishment which guides their civic conduct. The growing magnitude and importance of the development of the natural gas industry west of the Mississippi river year after year has placed that section on a par with the older fields east of the Mississippi, and it is well that our brethren of the Appa-

(CONTINUED ON PAGE 201)

Deserve these: Respect and love.

Merchandising via Service

*Courtesy and Enthusiasm in Service, Two Great Factors
in the Success of a Public Utility*

In choosing the title "Merchandising via Service," I do not mean the much abused word "service," but service every way that the word implies service and courtesy on the part of every individual in the organization from the manager to the man in the ditch. The writer

By A. J. GREGG

Commercial Manager, Eastern Wisconsin Electric Company,
Fond du Lac, Wisconsin

OST men are of the opinion that the average Chinaman, as he is known in America, may be considered unobservant, unimpressible and more or less of a stoic. To such men showing incident may be surprising. Not long ago a Chinese vegetable dealer entered one of the offices of a Public Utility Company in the West to pay a bill. After finishing his business, he went out in a wagon which was standing in front of the office and filling a basket with choice fruit, brought it to the door and presented it to the young lady at the counter who had waited on him. The local manager, not knowing the incident, stepped up to the Chinaman and told him that he had done a very nice thing and expressed his appreciation by personally thanking him.

The Chinaman looked at the manager for a moment and then said, "She smiled and thanked me for my bill." Without another word he went out of the office, climbed into his wagon, and drove away.

If such a little attention is noticed by an uneducated Mongolian, it is fair to assume that the average American will appreciate any similar consideration which tends to demonstrate that his existence is valued.

There are today about one thousand gas plants in the United States representing a total investment of \$1 billion dollars. Each one of these plants has certain intangible assets, which now and then are inventoried. Among the intangible assets is a difficult for the uninitiated to appraise is a man for courtesy. Yet, if a gas company holds a reputation, it necessarily possesses a valuable asset which may be an intangible asset for, beyond peradventure, it is the best possible adjunct the gas company has as a revenue producer.

The gas distributing business, as conducted by the Gas Company, is a vast machine. The essence

of operation in connection with the machine is good management, and good management simply means running the business with all parts in harmony. In order to obtain harmony, there must be lubrication, and as oil lubricates the engine and keeps down friction, so does courtesy in business intercourse smooth out the rough places, disarm unreasonable criticism and invite good will.

It is probable there never was a time when public utility companies were as closely scrutinized as they are today. Undoubtedly there are reasons for present conditions in this regard. In the first place, the public has gradually learned that the commodities handled by such corporations, which once were considered luxuries for the few, have now become necessities for the many. In the second place, through newspapers, magazines and other literature, the every day man has learned something more or less correct about the manufacture and distribution of gas, and he considers himself qualified, as a student and consumer, to have something to say on the subject whenever the opportunity occurs. In the third place, it must always be remembered that in the sale of an intangible commodity there is more or less mystery, and this feature is often the cause of criticism and controversy. Further, during recent years, almost every state has appointed a public utility commission, and through the commission's labors the troubles of consumers and the difficulties of the companies are alike laid bare to the public eye. No matter what may be said, truthfully or otherwise, about the methods of public utilities in the past, it may be safely asserted today that most utilities have put their houses in order, so that they are able to withstand the closest scrutiny of friend or foe.

Two great factors in the success of any gas company are courtesy and enthusiasm. These attributes must not be possessed solely by the president or manager, but must prevail throughout all departments and in all ranks. It is true that a utility company's business may be the only one of its kind in the community and that the public must go to it if service be desired. It is well to remember that that condition does not make the public less critical. If consumers are treated with consideration it is particularly pleasing to them, but if with discourtesy, it rankles through and through, because of the fact that they have no alternative, but must continue to do business with

The only way to quickly find success without working for it, is to look it up in the dictionary

the same company. It is well to remember that many men have short memories for favors and all men have long memories for injuries, whether real or fancied. Many of those interested have reason to regret that there does not always exist a proper sympathy between a utility company and its consumers. The consumers are sometimes liable to think they are being overcharged and otherwise imposed upon, and the employees of a company are too ready to think consumers and the public "kick" too easily and too frequently. But it might be well if the employee would sometimes put himself in the customer's place, and realize that it is not an unreasonable thing for a man to ask questions and seek explanation about what he does not comprehend, particularly when he is paying out his money. No utility company can afford to be independent of the public. It is the public whom it must please, and look to for its continued existence—the same public that does not forget things which please and things which displease. No matter how big or powerful a corporation may be, it is vulnerable—its very greatness sometimes making it a bigger and better target; and as far as independence is concerned, the man who runs a peanut stand on a pushcart, and has only a five-dollar capital invested in his business, is a thousand times more independent than the corporation with its millions. If business leaves his corner, the peanut man can push his cart along to another location, but the public utility company puts its money in the ground and cannot take it out, no matter what conditions may arise.

It seems reasonable to study the subject of courtesy from two viewpoints. The first is the kind which may well be considered desirable between the employees of a gas company and the public, and which might be termed CONVENTIONAL COURTESY. The second is the kind of courtesy that reaches out, beyond the actual point of personal contact, and follows people to their homes. This, perhaps, may best be described as AGGRESSIVE COURTESY.

Now, it so happens that there are few businesses which give so many opportunities for the display of conventional courtesy as that connected with the service of a gas company. The public is made of human beings, and they all appreciate and enjoy considerate treatment. There is absolutely no excuse for inconsiderate employees handing out to the company's patrons personal pride, indifference, brusqueness or any form of discourtesy. Every man connected with a public utility can do something each day to help along his company's business. By careless inattention he may likewise do something that will daily produce great injury to its interests. The public does not measure or judge a company by the acts of its president, officers or directors. They may be excellent men of high standing in the community, but they are usually known to only a few of the company's customers. The men who act as clerks, sales-

men, collectors, meter-readers and troublemen, are the men who see the customers in the office or meet them in their homes, who actually represent the company in its intercourse with the public, and it is through the words and actions of these men that the public commends or condemns their company. The gas business is not confined to any one class of people—all classes must be dealt with. It goes without saying that in the matter of treatment there should be no distinctions or discriminations between the big and the little, the high and the low, and the rich and the poor. All are equally entitled to courteous attention, and all should receive it.

The importance of the complaint department of a utility company cannot be too highly estimated. Upon the manner in which this end of the business is handled, largely depends the friendship of the company's customers, and the growth and prosperity of the company itself. The proper treatment of complaints from existing consumers is more important than the method of managing the new business department. Satisfied consumers almost invariably become active agents for the advancement of the company's business. On the other hand, it is not difficult to estimate how much the growth of a business may be retarded by dissatisfied customers who are invariably sore through lack of proper attention and a little timely courtesy. The more people a company can persuade to think favorably of its business—the faster it will grow. As a man thinks, so he will talk, and a company with pleased consumers will have many working overtime for it, whose names do not appear on the payroll.

One of the best plans a gas company can adopt as a means of educating employees along proper lines, is to regularly hold demonstration classes, or meetings, the object being to show what should be said and done under certain conditions which may be more or less difficult to handle. Once each month would not be too often to get certain employees together. Some could represent complaining customers who come to tell their grievances, and other employees should receive the imaginary complaints and dispose of them in a proper manner.

There should be plenty of criticism and discussion and if earnestly handled, much benefit will accrue from such meetings. Employees need to be shown the importance of patience and self-control. It cannot be denied that a few customers may be utterly unreasonable, and sometimes even insulting, when making their complaints, and occasionally an employer who may be receiving a complaint will have to use restraint to keep from getting into a fighting mood. However, although a man may hold an awful tempest within himself, it won't break loose if he keeps his tongue tied down—and under circumstances of this kind, a tied tongue is safer than a loose one.

If a customer has a complaint rankling in his breast, it is well to get it out. Each complaint is an oppor-

Wealth does not come by the most diligent saving, but by the most diligent producing

tunity to make a few friend, and friends made this way are the sort who will gladly prove themselves friendly when the occasion offers. Little or much may be done by an employe to satisfy a complainant, but the main thing is to make him feel that his complaint was listened to with attentive consideration, that an interest was taken in his trouble, and a determination was shown to make matters right. What may have been given the complainant in the way of an allowance, or what may have been promised to improve his service conditions are only of secondary importance to the complaining consumer. It is not too much to say that a complaint may, at times, even be welcomed, because of the opportunity it gives to strengthen the list of satisfied consumers. It is not going too far to state that no adverse criticism of a company should be permitted to go unchallenged. The man who adversely criticizes should be interviewed in a courteous manner, and with a real desire to please. The critic will not be any worse for the tactful interview, and the chances are he will feel better toward the company and its business.

The form of courtesy which may be termed aggressive is often evidenced along educational and publicity lines. This policy is one which points the way for consumers to remove the cause for trouble by displaying proper care in the use of their service, and frequently invites consumers to bring in their complaints, sometimes even before the consumers themselves have realized that they might have occasion to complain. Every possible means should be used to convince consumers that they are getting all they are paying for; that there is in reality no mystery about the gas business and that gas may be accurately measured and correctly billed. Courteous efforts along these lines help to establish confidence, and if confidence is maintained, it means more gas will be freely and willingly consumed. Individuals are fast learning the value of politeness. It is estimated that the people of the United States pay over eight million dollars annually to use the word "please" in their telegrams. That is—this large amount of money is paid for the word "please" when added to the stated ten words—or whatever the number—may be. It is creditable to the people of America that the word "please" is so highly valued and the cost of inserting it in telegrams is paid without murmur.

Along the lines of aggressive courtesy, a gas company has many opportunities to impress its customers and the public with its sincere desire to supply good service. This good service does not alone mean that an ample supply of gas shall always be available, but that all the niceties in the intercourse between the company and its customers will be cheerfully observed. It would be well for the gas company to see that these opportunities are not overlooked. When a new customer is taken on, it is an opportunity to send a courteous letter which will surely interest and please the recipient. While giving assur-

ances of personal interest and good service, the letter might readily point the way for the consumer to find additional uses for the commodity supplied. When the consumer sends a check in payment of his account, there is an opportunity to send a nicely worded card of appreciation with the receipt. When a consumer makes a purchase of lamps or any small appliances, the bag or paper in which the purchases are carried away might well have printed upon it a word of thanks for patronage given, and a desire expressed for its continuance. And even when a customer may be moving away and discontinuing service, there may be sent with the closing bill a card expressing the company's appreciation of past pleasant relations and a hope that they may be renewed at some future time. "Thank you" is pleasant to hear, and not objectionable when seen. If these words are stamped upon a receipted bill or stuck up in a conspicuous place over a cashier's desk, they have some value—particularly if the cashier happens to think he is too big or too busy to utter these magic words himself.

Be he on land or sea, the courteous man cannot fail to attract friends and disarm enemies.

Courtesy does not mean flattery, bowing and scraping—but common, ordinary, every-day politeness—the kind that can give back a smile for a frown and always shows a desire to please. This sort of courtesy is a fine art, and when consistently practiced, will spread sunshine in places that would otherwise be gloomy. Beyond any shadow of doubt courtesy is of incomparable value in the operation and up-building of a gas business. It costs so little and means so much. It is the easy way to get along, represents no expenditure, yet never fails to yield handsome returns.

THE OBSERVING CONSUMER

If there is any class of business which is at all times on trial before the great court of Public Opinion it is that of the Public Utility Corporation. The establishments of the merchant, the manufacturer and other industries are operated from eight to ten hours daily—on working days only—but the gas company must be ready to supply instant service day and night, week-days and Sundays, feast days and fast days, high days and holidays. The jury is in constant session taking cognizance of the evidence which is being given, and be the testimony good or bad, honest or dishonest, worthy or unworthy, no item is overlooked when the time arrives to review, sum up and render a verdict. The Utility Company cannot select its jurors as they are selected by the opposing attorneys in a trial in court. Its jurors are selected by the destiny that groups men together in cities and communities. These jurors may not be challenged, but must be accepted with all the bias or prejudice they may bring to the trial. Consequently it may be the part of wisdom for the heads of Public Utility organizations to study the jurors—to analyze and diagnose

any causes for suspicion, prejudice and opposition to the end that the evidence may be so influenced and directed by liberal policies and enlightened management that the verdict may be a source of every-day satisfaction. Certain conditions surrounding the operation of a Public Utility's business are fixed and cannot be altered, and such being the case, operation should be so adjusted that these conditions may be recognized, and, if possible, used to advantage. It is as advisable for a corporation to be philosophical when dealing with the inevitable, as it is for the individual—both may well agree with James Whitcomb Riley:

"It hain't no use to grumble and complain;
It's just as cheap and easy to rejoice;
When God sorts out the weather and sends rain,
WHY, rain's my choice."

It is probably safe to say that three-fourths of the mistakes that the gas man makes in his intercourse with the public are made because he does not really know the things he thinks he knows. If the gas company is constantly on trial, had it not better keep its eye on the juror and if possible get his viewpoint? There was a time when it was thought the juror could be ignored,—but now things are different. A Russian proverb says: "Time does not bow to you, you must bow to time." Today it is perhaps better to bow alike to Time and the juror and then take them into consideration. The juror can only be fixed by some one obtaining his viewpoint—that is, by the Corporation man looking at the business from the outside, as it is seen by the consumer.

The consumer is a many sided individual in some respects, but in the main he will be found reasonable, tractable and not unfriendly. In my efforts to illustrate the different angles of observation from which the consumer looks inward at our business, I will endeavor to develop five sides of his character. It will be distinctly understood that I am not advising anyone how to change or conduct his business. Long ago I learned it is permissible to express an opinion—but advice should be sent by slow freight. The consumer has some advantage not possessed by the man inside, and the man on the inside can well afford to listen if the man on the outside has anything to say. The five angles from which the consumer will here be considered are (1) The Impressionist, (2) The Student, (3) The Human Being, (4) The Customer and (5) The Investor.

THE IMPRESSIONIST

It has been truly said that trifles make perfection but perfection is no trifle. As an impressionist, the consumer is either consciously or subconsciously influenced by what appear to be trifles. Daily as he proceeds on his way he observes the properties and employes of the gas company. Do they impress him favorably or do they irritate him? What pleases him

and why? When is he jarred and for what reason? As he looks about the streets of his town and notices the work of our service men, is it regular and clean cut, do they replace the sod in good shape and do they sweep the sidewalk and rake the lawn and leave everything in ship shape before leaving after installing a new service. Don't imagine these conditions are not observed by the consumer. How about the gas plant, warehouses and garages? Do they always present a creditable appearance? Could the grounds around them be kept more tidy and would some needed repairs or a coat of paint on some building make a better impression? The consumer misses nothing. He knows whether you are properly maintaining your property or allowing it to degenerate. If objectionable conditions continue without improvement, he may charitably conclude you are in a rut and he knows that the only difference between a rut and the grave is in its length and breadth.

The consumer has business in your office occasionally. Is it an up-to-date office, with open, inviting appearance, or is it one of the old, forbidding type, with high railings, with little windows for the clerks to look through at customers and where customers must stand off and meekly take whatever may be handed them? A pleasant, cheerful office is an invitation to come again, and no one realizes it more than the consumer. Are the clerks neatly dressed—the men with clean clothes and clean-shaven faces, and the women in such costumes and colors as benefit their work? Is the manager accessible or is he locked in behind a closed door from where he cannot see his assistants and where the company's customers cannot see him? High railings, dark partitions and closed doors impress the consumer as belonging to ways that are dark and secrets that are deep. Open offices invite him to inspect and he is liable to say to himself that an invitation to inspect implies that there is nothing to conceal.

I have heard some men say, "What does it matter to the consumer how we maintain our property? We get no more revenue from him whether our buildings and property are tidy or dirty and our office inviting or the reverse! He gets the service just the same." There is the great mistake. We are part of the community in which he lives and takes a pride. Our methods either help the community or hurt it. If our methods please him, he will ultimately take more liberally of our service, and our business will be correspondingly greater. The Impressionist side of the consumer is one that should be regarded as highly important and not to be slightly ignored or carelessly overlooked.

THE STUDENT

The one thing that is most frequently overlooked in connection with the gas business is that the company is distributing an intangible commodity. The purchaser does not see what he is buying, as is the case with ordinary merchandise. He cannot tell when

Never credit luck with the sale you make—diligence is the father of luck

he pays his bill that he is paying only for what he has received. His senses, which are useful in buying some things do not help him in his purchases of gas. Under conditions like these, something must be relied upon to take the place of the senses and the only substitute is confidence. Now the average consumer wants to know just where he is at when spending money, and the gas company should make it easy for him to learn all that is possible concerning the real facts surrounding the production and distribution of gas. The consumer will study conditions and reach his own conclusions about our business. If the truth is spread before him for thoughtful inspection, his conclusions are liable to be favorable. If, however, he becomes saturated with misinformation concerning the methods and aims of the gas company, then his ideas will be perverted and his attitude prejudiced. The average consumer is reasonable and willing that a company giving a good service should receive a fair return on its investment. However, in a reasonable manner he must be shown what is the investment and what constitutes a fair return thereon.

Perhaps there is nothing more important for the consumer to study than the subject of what is good service and how it may be obtained. He should be instructed that when he has troubles with his service he should tell them to the company and not to his neighbor. He should know what department of the company to communicate with and what is the telephone number.

Does the consumer know that all rates for service are subject to approval by the State Public Utility Commission? Does he know that these rates are ordered or approved only after exhaustive investigations made by the Commission's experts as to the company's actual investment, operating expenses, and depreciation charges and are calculated to yield only a small return on the capital invested? Does he know that the Gas Company cannot raise a rate or increase a charge without an order from the Utility Commission after a public hearing has been held? Does he know that the gas company cannot issue any securities without the approval of the Utility Commission, and the Company must show how every dollar derived from the sale of securities is to be spent? Does he know that in fixing rates the Utility Commission does not consider the company's bonded indebtedness or outstanding capital stock as a basis for calculating what should be the company's net earnings? Does he know that the return the Company is allowed to earn on its investment is not sufficient to provide for extensions and betterments, and that for such purposes new money must come from the sale of the Company's securities to investors? Does the consumer know that if he has a grievance against the Company he may make a complaint to the Utility Commission, and his trouble will be thoroughly investigated? These are matters for the consumers to study. At times they mystify and bother him, but the more he learns regarding public regulation, the

more he is liable to esteem the Utility Commission, respect the Company and be satisfied that his individual interests are fully protected. With a proper understanding of public regulation, the consumer has a better grasp of the economic laws of natural monopoly. As a student, he may well consider some chapters from the records of disaster that are written in the history of many cities and towns in America where rival utility companies have attempted to operate in the same field, where that field is properly served by one company at reasonable rates. His study will develop that unfair competitive conditions are ultimately disadvantageous to the consumer, who by increased rates must inevitably pay for the destruction caused by unnecessary competition. All publicity of misinformation should be counteracted by even greater publicity of true conditions. Truth is mighty and if the consumer may study and grasp its meaning he will eventually become a defender of the gas company and an ardent advocate of its service.

THE HUMAN BEING

Quite recently the manager of one of the districts operated by a large Utility Company in a western state received a letter from a consumer reading as follows:

"Ordinarily when we pay an account promptly, we feel we have fulfilled our obligation, but in your case we are moved to something more, and the purpose of this letter is to thank you for the businesslike manner in which our transactions with your company have been handled. Furthermore, we have enjoyed that indefinable 'something' which goes with your service, and which makes it a pleasure to do business with you."

The consumer is a human being and that indefinable "something" referred to is recognition of the tactful, attentive courtesy displayed to him as an individual. This attribute attracts new consumers, and makes the older ones feel at ease and satisfied. It is, in fact, the open sesame to the public good will, without which no company can continue to be successfully operated. The rulings and orders of Utility Commissions may govern the quality, manufacture and distribution of a commodity, but they do not stipulate what shall be the attitude to the individual consumer. That is left to the management.

The consumer dislikes to be herded—he hates to be known as one of the many thousand consumers a company may have in a community. He likes to be considered as an individual and if he is known by his name, he likes it better still.

Much of the criticism directed against Utility Companies might be dispelled or relieved by a broad-minded policy in handling complaints, in which each case is treated as an opportunity for acquaintance with the consumer and each complaint is given an individuality, by impartial and critical investiga-

Do your work better than anyone else could do it—that is the margin of success

tion. A complaint is an opportunity to make a friend, and the opportunity is with the individual in particular and not with the class of complaint in general. To satisfy means to hold business that probably was difficult and costly to get. To satisfy means the keeping of old friends and the making of new ones—and friends build up a business. In handling complaints, words are only one means of expression and manner is quite as important; a kindly and courteous manner is not only the sign and mark of a self-respecting man, but it is to words what oil is to machinery in making them move effectively to their purpose. The consumer gives many opportunities for Utility Company employes to know him and please him. Perhaps no opportunity occurs more frequently than in the payment of bills. He probably calls at your office for this purpose once a month. If he makes such a call, pays his money and has his receipt handed him without word or recognition from the employe, he misses something, and an opportunity for the company has been lost. If the next time he calls, the clerk says "thanks" when handing the receipt, he feels a slight recognition of his existence. If on a third call the clerk says "thank you," he feels more interested, and if on the fourth call to pay money there should be a clerk with tact enough to say "thank you, Mr. Jones," the consumer goes out with an appreciative smile, and the thought in his mind that he is known as a consumer and recognized as an individual. Too much importance cannot be placed upon the treatment of the consumer as an individual who appreciates all the niceties in the relations of one human being to another, and above all he appreciates:

"How sweet and gracious, even in common speech,
Is that fine sense which men call Courtesy!
Wholesome as air and genial as the light!
Welcome in every clime as breath of flowers,
It transmutes aliens into trusting friends,
And gives its owner passport round the globe!"

Our gas plant ought to be working at capacity twenty-four hours daily. It does not have to sleep. The load curve ought to be a straight line, before the gas consumption of any community has reached the saturation point. New consumers are desirable, but the development of increased business with existing customers is still more desirable. For greater business from present investment we must cultivate the consumer. It may be considered an axiom that no consumer is using as much as he could take to his own advantage, and the most profitable business is produced by inducing consumers to increase the number of users of gas. Much time and money have been spent in the past in an endeavor to clip a small percentage from the cost of manufacturing and delivering a thousand feet of gas. Economies of operation are to be commended, but the time has passed when it is simply a question of running a gas service to the

consumer's premises, and dumping a few thousand feet there each month. The time has come when it is up to us to interest ourselves more than ever before in the manner and method of using our product on the consumer's premises, so that the greatest possible economies and benefits may be secured.

The consumer knows of no saturation point, neither should we. The consumer is willing that the annual consumption per capita should increase year by year if he is benefited thereby. It is up to us to show him that gas and convenience are synonymous and in what direction new benefits may be obtained. There is no limit to intensive development of this kind—but it cannot be obtained by wishing and waiting. The point upon which this whole question of business development hangs is the ability to let the people know—in other words, to create the desire. The consumer must be informed so that he may be fully advised as to the possibilities of gas service, in the lightening of labor and in adding comfort and good cheer to the life of mankind. He is already in receptive condition and is only waiting within the range of industrial and commercial life. All we need is men who have a thorough, practical and intimate knowledge of the possibilities in the use of gas. The possession of this knowledge fills them with confidence and enthusiasm, so that when they talk to the consumer, the battle is as good as won. Obstacles are swept aside, objections are overruled, competitors are annihilated and, by-and-by, the consumer, far from being saturated, will, like *Oliver Twist*, only ask for more.

THE INVESTOR

The problem as to the future of Public Utility Companies is one which occupies considerable attention in the public mind today, and is one which is of vital importance to the Utility Company and the public. There is a competition going on between public control and private ownership. Public control is attractive to many, but even its friends acknowledge that because of certain inherent conditions it must travel a long way before it reaches success. Private ownership has pioneered, nursed and developed the business, and the same qualifications which have produced so much good work in the past should enable it to continue and progress in the future. There is a greater need for co-operation between the Utility Company and the Consumer than ever before. But co-operation is a matter of give as well as take. Sometimes it amounts to doing the other fellow's way when he won't ours. The consumer is thinking as he never did before—he looks at the Utility Company and believes it is prosperous. Why should he not share in its prosperity? Some wise man has said the best way to conserve private ownership is to increase the number of private owners. Who is brave enough to say that is not the answer to the problem? This is an age of frankness, directness and simplicity. If we really want more stockholders among our customers, we must go after them candidly and openly.

Men and nations who pinch the pennies hardest are never the richest

Don't tell them the benefit will be theirs only—but that the advantages will be mutual. Not long ago one of the power companies in this state received authority to add a temporary surcharge to its rates. A certain consumer living in the territory supplied went to his neighbor one day and said, "How about this surcharge the power company is collecting? Don't you think we had better look into it?" The neighbor replied, "No, I have been making inquiries regarding the uncontrollable expenses our company has had to face, and we felt that the surcharge is justified." The other man exclaimed, "What do you mean by 'our company'?" The reply was, "Oh, I'm a stockholder of the Power Company."

What better plan for its own protection and prosperity can a Public Utility Company adopt than by making the consumer a full partner in the organization? If the company is properly managed, if it has made a favorable impression upon the consumer, he is already predisposed in its favor, and it will not be difficult to convince him that in order to make the relationship perfect, he should be a stockholder. His desire to become a stockholder will probably be in direct relation to the treatment he may have received from our company in the past, and if he has been well treated, the amount of stock he will take will probably be limited only by his financial capacity.

Human beings are not like merchandise, nor are they to be handled like merchandise. Dealing with the consumer is a problem in personality, and it is through the point of contact, wherever it may be; at the counter, over the telephone, through correspondence or when and where service may be rendered, that the favorable impressions are created which ultimately affect the prosperity of the Utility Company. The physical assets of a corporation may be of fabulous value and may make a handsome showing in an annual report to shareholders, but the value of that intangible asset, the confidence and good will of the consumer, may be, after all, the one great element which produces earning power and gives stability to the property.

HOW DO YOU TREAT YOUR CUSTOMERS?

What is the turnover of your customers? How many are constant customers, people who come to your store time after time? During a seller's market these things may not be so important, but when buyers are not calling for goods faster than merchants can supply them, the situation is different.

WHAT CAUSES HIGH TURNOVER OF CUSTOMERS

The experience of a mid-western merchant who realized that many former customers no longer came to his store, well illustrates the point that customers cannot be given too much careful attention if a growing clientele is desired. This merchant sent a questionnaire to former customers asking for a frank state-

ment why they stopped calling. Two hundred replies included the following:

Indifference of sales people.....	47
Attempts at substitution.....	24
Errors	18
Tricky methods	18
Slow deliveries	17
Over-insistence of sales people.....	16
Insolence of sales people.....	16
Unnecessary delays in service.....	13
Tactless business policies.....	11
Bad arrangement of store.....	9
Ignorance of sales people concerning goods	6
Refusal to exchange purchases.....	4
Poor quality of goods.....	1

Think of it, only one customer lost through dissatisfaction with the goods, eighty-five customers lost through dissatisfaction with the sales people and service. How do our commercial departments compare with these figures? Have we efficient and courteous sales people? You will note that forty-seven customers no longer came to this store due to indifference of sales people and thirteen due to unnecessary delays in service. There are several different things that can enter into either of the two complaints, one of the greatest, I think, is the spirit in which a clerk waits on a customer. If the customer enters our store and stops long enough to look over some appliance—she is interested and should be waited on at once. I have seen clerks sit on a chair and have the customer come back and ask the price of some certain article (this reminds me of a headline I noticed in a Chicago paper, "DON'T YELL ABOUT THE BUSINESS DEPRESSION, WAIT ON YOUR CUSTOMERS.") When this clerk was asked why she did not wait on the customer, her answer was, "I don't know enough about those things." Can you imagine a statement of this nature after working in this particular place for eighteen months? There is something radically wrong with an employee, who, after working eighteen months waiting on customers every day, and does not know the merchandise she is selling. There is only one thing that can and ought to be done, replace her as soon as possible. We cannot afford to allow any customers to get away from us this day and age. In connection with the above, I might add a little suggestion: Keep stock turnover high and customer turnover low and when selling our merchandise let us make a customer not a sale.

In conclusion, I am adding a few hints on How to Reduce Your Gas Bills, a copy of which you will find below. We recently sent one to each of our customers attached to the gas bill.

Every pessimist totes the world on his shoulders—Kaufman

HOW TO REDUCE YOUR GAS BILLS

If You Only Save a Penny's Worth of Gas a Day
It Reduces Your Monthly Bill.

- Don't heat a whole kettle full of water when you only need a pint or two.
- Don't keep a high flame under anything that's boiling; turn down the flame or use the simmer burner.
- Don't try to turn off the cock part way at meter—this only interferes with proper flow of gas and does not save it.
- Don't expect to use gas economically on an old, worn out gas range or any range out of adjustment.
- Don't heat your oven to make a single pie—bake up what you need for several days ahead—cake, cookies, etc.
- Don't make toast in the oven; use a toaster that sets over a top burner.
- Don't light burners until food is all ready for the stove.
- Don't use a large burner when a small one will do.
- Don't purchase so-called gas saving devices unless approved by us.

They are old; you all know them and have known them for a good many years. But do we preach these things to our customers? You may say every woman knows that. Perhaps it is true; but why not have our fitters, when making adjustments, the salesmen when making calls, remind the lady of the house about these things? I do not mean by this that they should boldly inform the lady that she is wasting gas; I have found that most women think they are very economical even if she does put the dish water on and allow it to boil away while she is visiting over the back yard fence or talking over the telephone. Use a little tact and during the course of the conversation gradually drift toward the end sought. A woman might intend to be economical, but by continually using the stove she is bound to become a little careless, and when they get in this state we are the goats. This is very similar to some of us driving a car or a Ford every day. At first we are very careful; we blow the horn as we approach every crossing, but later on we drive as though there were no crossings and sometimes we land in the hospital when some other fellow coming from another direction with the same idea, hits you broadside. It is carelessness, nothing else, just as it is with our complaints. A woman becomes careless, and if you remind her of these things she will invariably say, "Oh, I only did that once." Yes! Perhaps once every meal and thirty days every month means a lot of gas wasted and a dissatisfied consumer. If we make the effort to go into our complaints more thoroughly we can satisfy more of our consumers, make friends out of them and then sell them our merchandise.

—Courtesy Wisconsin Gas Association.

BUSINESS INCREASING—A SCIENCE

IT is interesting to note how although in some breaches of trade, and in some institutions, "System" and "Modern Business Practice" is carried to an excess, a very practical, (not ultra) work has been accomplished by the trade Research Department of Wm. H. Rankin Company, Chicago and New York.

Mr. Herman A. Groth, director of this department and Treasurer of the company, writes us that his department has just completed the following compilation by countries, viz: Farm value, crop value, income tax, white population, manufacturing value, total car registrations, total mileage of all roads, total mileage of all surface roads, etc., the information being given for every one of the 3,048 counties in the United States.

In the compilation, the same information is recapitulated by states and in the same work is shown by states a climatology record of average, based on 26 to 50 years, thereby giving manufacturers basic information on which to work out potential sales-budgets as affecting any one of the 3,058 counties referred to.

In preparing the work consultation became necessary with all departments in Washington and the various state statistical departments, and private research and statistical centers, such as Harvard, Babson Institute, etc.

The size of this most valuable work is 6½ x 8½ inches and comprises over 900 (typed) filled-in pages, and in bulk is found in two loose-leaf leather binders. The leaves are printed with many blanks left for the filling-in process.

The work has been fundamentally prepared for customers of the Rankin Company's advertising service, but since applications have been received from outside sources, copies may be procured at a figure that covers about 7 cents per county-information.

Works of this nature that make for a lessening of waste and the conserving of resources are indeed commendable. We note among the concerns who employ this work in the business-conduct, one of the leading manufacturers of gas ranges, namely, the George D. Roper Corporation. The work is a means of indicating to a manufacturer where best he may find his market.

The best business man isn't always the one who is quickest to see through a proposition; it's the one who is quickest to see a proposition through.
— The Kodak Salesman.

Advertising pulls all the time, and there is no closed season for results

PARTNERSHIPS IN GAS INTERESTS

A Remedy for Bolshevism

AN interesting article on the labor situation in Great Britain, and we have like conditions here, appeared in "Gas", published across the Atlantic. The editor does not hesitate to speak in most scathing terms of *not labor*, but of the *dregs of labor* of which labor has its proportion along with all other fields, for there are those who are the "dregs", in the mental field, in the financial field, in the manufacturing field, in the social field, in fact in all fields.

Labor, as well as all other branches in this great world of ours should not confound the desires of these parasites with the desires and ambitions of those in its field as well as in all other fields, whose desires are normal, whose brains are well balanced and whose personal preferences are to fit into the great fabric of world's life, rather than to become or remain, broken and imperfect cogs in the great mechanism.

The editor referred to says:—"Subversive Bolshevism has expanded to such an alarming extent throughout the British Isles that it is not uncommon to hear 'The Red Flag', the anthem of these avowed Anarchists, sung at public gatherings where the residuum of the industrial world oppressively parade in all their truculent defiance of authority and all their contempt of the real interests of the class of which they form a noxious excrescence."

The article in general reads as follows: "From an academic angle the oratory at the co-partnership meeting in the Hotel Metropole, London, left nothing to be desired. Lord Robert Cecil pointed out the dangers of the Labour war against Capital, and Lord Leverhulme emphasized the difficulties which stood in the way of bringing Capital and Labour into line in the spirit of confident co-operation. The lessons and benefits of co-operation were so eloquently described by Mr. Milne Watson, as the head of the more important co-partnership organizations in the Gas Industry, that the London assembly would need nothing further to convince them of its almost illimitable advantages. But how are the principles to be applied in a general sense? Lord Leverhulme argued that any scheme, to have a national effect, must be founded on a "broad gauge system", and must include not one industry, not one community, not one nation, but the workers throughout the entire world.

The very conception of a scheme of such magnitude is stupendous. So far the co-partnership schemes, as we know them, are for the most part confined to the Gas Industry, and are of purely local incidence. No attempt has yet been made to extend the principles and practice beyond the borders of individual undertakings, and as the whole matter is at present only in its trial stage it would perhaps be rash to express an opinion as to its final success. What did Lord Leverhulme mean by "the broad gauge system?" To put the proposition concisely, it signifies home, country's prosperity, world welfare.

It is too expansive easily to be understandable even by men who have given close attention to political economy; and the consummation of so gigantic a scheme as that forecast by Lord Leverhulme would necessarily occupy not years but generations.

But for the moment we have to consider the subject only as it affects the Gas Industry. There is everywhere an increased demand for gas, therefore Gas Undertakings are the *media* for increased employment. Human nature preserves its characteristics in all social and industrial conditions, consequently it is influenced by the adventitious sway of opportunities. Ever since man became a helot he has had a tendency—especially in the lower plane of labour—to regard himself as a machine. He laboured a given number of hours a week, received his wages on Saturday, and spent his week-end leisure and his earnings in his pub (which he regarded as his club) and only gave his mind to the not very exhilarating thought that the dawn of the next working day would only bring a monotonous iteration. Individually he was powerless to alter his own social condition, therefore he could not be blamed for affiliating himself to some trade union in the hope of awakening an interest in his own career.

He was all right in the collective sense until Labour began to dictate to the Capital which gave propulsion to the wheels of Industry and Commerce, and then he became a danger to his own species. Bolshevism sneaked into the Labour ranks like a thief in the night; Syndicalism was the immediate outcome. The depths of the poison schemes—more dangerous than any gas ever invented by the most criminally-minded German chemist—have not yet been fathomed. But what with the sporadic ululations about "The Red Flag" and the proved maintenance of the Communist press and Socialistic schools with Bolshevik cash, sufficient evidence has been adduced to convince the average man that there exists a greater danger to the nation than ever was hatched by the fugitive Hohenzollern and his creatures even in their most dangerous days.

What is it? Bolshevism. What is the remedy? Co-partnership established and developed on a liberal plan. Gas undertakings have led the way, the London gas corporations being in the forefront. We have noticed that in recent applications for powers under the Gas Regulation Act undertakings have included co-partnership schemes. All the similar enterprises which have been established are doing good work. Show the intelligent working man how to save money out of his earnings and invest it at a reasonable rate of interest and one may rest assured that his vapid Anarchism will soon be transmuted into tolerant liberalism as a prelude to permanent conservatism—we do not mean in the political sense, but in the industrial connection. Give the working man the feeling of proprietorship; that will make him think about the security of his own position, and by the same process of reasoning make his social predilections constructive rather than destructive. When Lord Robert Cecil and Lord Leverhulme come once

Don't let "oversold" mean "underadvertised."—Class

more to review the progress made in co-partnership, let it be said that the Gas Undertakings were in the van. Every gas manager with a staff of fifty men would do well seriously to consider the co-partnership plan: in days of industrial strife brought about by Bolshevik money it might in time to come safeguard his company against considerable loss and himself from unfathomable annoyance and anxiety. At any rate it would figure as one "sleeper" in Lord Leverhulme's worthily ambitious "broad gauge system".

No one decries "labor"; we believe none would decry "unions", but all well minded refuse to see the domination that exists in the hands of those of unholy purpose, to no small extent.

SCOTT ON THE COAST

AMONG the very latest gas exhibits to be installed and connected for live exhibit purposes at the Furniture Exchange in San Francisco, is that of the Scott Gas Appliance Company of Washington, D. C. It is this company's Pacific Coast distribution that is in the general hands of Will W. Barnes, who is now back "in the traces," a Pacific Coaster instead of an Atlantic Coaster as formerly.

Mr. Barnes' headquarters, which will also be the main Pacific Coast office of the Scott Gas Appliance Company, will be at 1222 Sante Fe Avenue, Los Angeles. Here also are located under the head of sales-representation, Frederick C. Shepard and L. Moblo, the former having been superintendent of the Minneapolis Gas Light Company for thirty-seven years, the latter well known in the gas-heating field, having been for twenty years associated with U. S. Register Company of Battle Creek, Mich.

A. P. Bartley, a man well and favorably known throughout the coast gas-industry territory has been placed in charge of the San Francisco exhibit as district sales manager of the Scott product.

A Scott range, in addition to being exhibited at the Furniture Exchange, is being displayed at the Pacific Gas & Electric Company's laboratory, which is open to all gas consumers. Here two cadet engineers are on regular duty, prepared to demonstrate the various makes of gas ranges and industrial appliances. The laboratory offers an excellent means for not only demonstrating the new products, but as well of better acquainting the users of appliances with the best and most economical means whereby to get desired results with the least consumption of gas.

The open-handed method of the Gas and Electric Company whereby visitors are made welcome in the laboratory, instead of being admitted only by special favor of an official, might well be copied by such companies as today make of their laboratories only a test department back of the scenes.

Our correspondent states that during the week just ending at the time of his writing, two ranges built on the closed top principle were being shown at the gas

building under public test, the "Scott" and the "Vulcan" both, while the details of application are different, conserving the heat under the top, and largely holding it there for distribution—radiation through the closed top, to the vessels; a principle that only so far as closet top goes has been long employed in certain gas range construction. The confining of the heat and as the expression goes in automobile fields, the "refining" of the idea is notably carried to perfection in the construction of these two ranges, which are materially different from other closed top products.

It must be remembered that there is a marked difference between the ordinary closed top range as generally constructed, in the natural gas field, and the closed top as applied in both the "Vulcan" and "Scott" ranges. The Pacific Coast is doing big things in gas appliance and gas sales matters.

THREE TIMES AROUND

WE often hear quotations from statistical writings, wherein we are informed that a certain number of dollar bills placed to end will encircle the globe, or so many miles of the railroad tracks in the United States will encircle this planet of ours a certain number of times, or that this-that-or-the-other will nearly or more than encircle the world.

We are now informed that if the gas mains owned by the gas companies in this company were all exhumed and the piping were placed end to end there would be over sixty-nine thousand miles, and since the circumference of globe figures about one-third of this distance in one cycle, then these mains if strung out would accomplish three circumferences, serving gas in three directions around the world, one, for instance, from north to south, and south to north around the globe; another, encircling the globe at a different compass-point, with a third doing similarly, thus dividing the globe into six sections similar to the cutting of an orange peel. As the boys would say, "some mileage!"

A SERMON ON A BEE

WHEN some of your salesmen managers complain that it is hard to make sales, and report that it is impossible to find buyers for your products, remind them that a red clover blossom contains less than one-eighth of a grain of sugar, that seven thousand grains are required to make a pound of honey, that a vagabond bee, seeking everywhere for sweetness, must obtain this material from fifty-six thousand clover heads.

Tell them, too, that the bee is compelled to insert its proboscis separately into each floret or flower-tube, and that there are about sixty of these to each head.

Remind them that the bee, in performing that operation sixty times fifty-six thousand, or three million three hundred and sixty thousand times, gets only enough nectar for one pound of honey—and then does not get the honey. —Thomas Dreier.

The thing that matters is what you think of yourself, and that you believe in yourself—Beffel

WILLIAM McDONALD



William McDonald

ONE of the very sad duties of an editor, is that of recounting deaths in an industry. Though these must occur, they none the less come as a shock, and especially so when the deceased was not only held in high esteem, but considered a personal friend of the editor.

Mr. William McDonald of Albany was one of the first men in the industry, whom the editor of THE GAS INDUSTRY Magazine met after coming to this field; another being Mr. Irvin Butterworth, of Detroit, and since deceased, and as a third, Mr. L. Doherty. These three men gave the writer encouragement and counsel, that was invaluable during a period when as many were strangers to the industry as are now his acquaintances and friends throughout the gas fields of the United States.

Mr. McDonald especially we had reason to owe appreciation, in view of the fact that more frequently did we come in touch with him than with the others we have mentioned, and because with his earnest, and frank Scotch characteristics he advised us to stand firm when his judgment so led him, as well as in handling various matters that the editor took occasion to bring to his attention, and regarding which asked his opinion.

Mr. McDonald was at the time of his death in his 58th year, living to a splendid period in life when looking forward, as well as looking backward, gives one a sense of vision much to be coveted. He was born July 20, 1843, and in point of years as well as in connection with the gas meter business was the oldest practitioner in that field in the United States, a worthy successor to a highly representative and uniformly successful family predecessor through whose efforts this gas-meter business had been founded which had flourished in this country.

Mr. McDonald's father in 1855 started the meter business which Mr. McDonald succeeded. It was originally D. & H. McDonald but the brother retired and moved to Scotland.

Mr. McDonald became manager of the concern which was styled D. McDonald & Company. The factory was burned in 1872, but was at once rebuilt.

Mr. McDonald travelled extensively and was known from the Atlantic to the Pacific. In 1899 he was elected president of the Western Gas Association, a national organization. He considered this a great honor and served with dignity. In the same year he, with Mr. George G. Bell, now of the American Gas Association, and

Mr. F. H. Shelton went as delegates to the International Gas Congress abroad, representing the Western Association.

Mr. McDonald was an earnest supporter of all gas associations, and was one of the committee that was appointed to consider the amalgamation of all of the then existing national gas associations, thereby to form the late American Gas Institute. He was a member of several of the gas associations at the time of his death, as well as of the Calvary Baptist Church of Albany.

He was Director and Treasurer of the local Y. M. C. A., and keenly interested in all Y. M. C. A. movements. He was with one other gentleman, a member of the advisory board of the Y. W. C. A., these two being the only men officially connected with that organization. He was a member of Temple Lodge F. & A. M. He belonged to the New York Yacht Club, New York Lotus Club, and the Seaview Golf Club.

Mr. McDonald is survived by six children, four sons, of whom Donald McDonald, General Superintendent of the American Meter Company, is the eldest, William, Jr., a physician in New Haven; Albert, a consulting engineer in New York; Frederick, Manager of the D. McDonald Meter Company, Div., factory in Albany.

A FOREIGN CLIPPING

IT is rather interesting to note how our foreign contemporaries express themselves in connection with operations which are known to us in America by quite different names than those used across the Atlantic. The following item appeared in one of Great Britain's gas magazines entitled "Gas".

NATURAL GAS AND PETROLEUM

A Zurich engineer, A. Ehrat, has lodged at the British Patents Office specifications of his scheme for obtaining natural gas and petroleum. Petroleum and natural gas are obtained by driving galleries into the oil-bearing rock or sand and tapping the oil and gas deposits by drilling bore-holes from the galleries into the petroliferous stratum. Shafts are sunk from which galleries are driven either above or below the petroliferous stratum and bore-holes extend into the stratum and are lined with tubes connected to a system of piping by which the oil and gas is conducted to the surface, assisted if necessary by pumping. Compressed air or gas may be introduced to expel the oil by pressure, and the oil may be washed out by means of liquid introduced through the borings. In sinking a shaft a series of bore-holes are made surrounding a shaft and a water suspension of clay is pumped into the surrounding soil to block the pores and prevent escape of oil and gas while the shaft is being sunk.

to find a short road to success would make good epitaphs for the vast multitudes of failures.

The Convenience of Gas

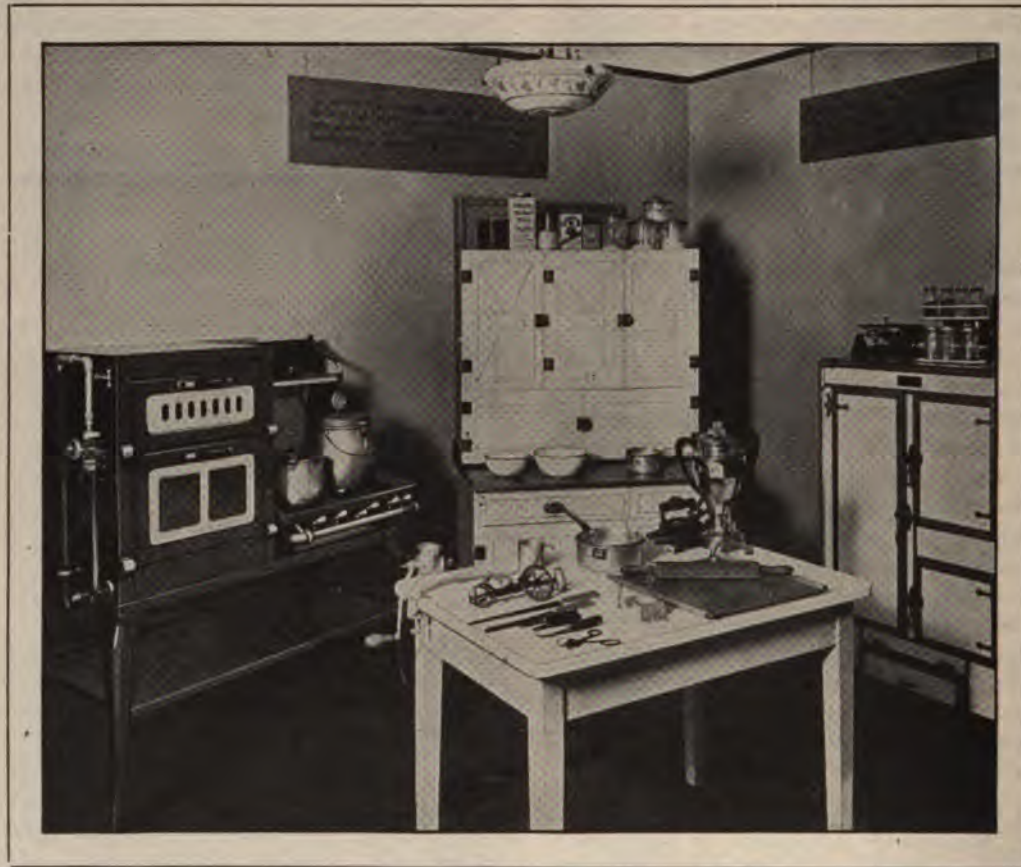
Employing Gas to Make the Kitchen the Pride of the Home

AS a matter of convenience, gas has little to offer that cannot be offered by electricity, while the electric man says, "In our electric field we have greater convenience to offer to the public than has the gas company in its gas product."

Viewing the matter from all standpoints, taking into consideration the instantaneous service of gas, which requires no element between the gas-flame and

gas; second, cost of electric-appliances versus gas-appliances, and third, the attractiveness and maintenance cost of one type of appliance versus the other type.

The matter of cost of operation is open to argument, so says the electrical man, the difference in cost in the equipment is a thing that we are told will very nearly equalize when certain electric patents are



ATTRACTIVE ALL GAS KITCHEN

the vessel, versus some form of heat-transmitting element which must be first heated in electric-heat service, let us say that from the standpoint of convenience it is close to a matter of fifty-fifty. This being the case, the question arises that what then shall determine the public in which it shall select.

Apparently, but three points remain to be discussed, one the point of cost of electric application versus

no longer in vogue. This leaves us with the one remaining point, namely, that of attractiveness, efficiency and maintenance-cost of appliance, and here to a large extent lies the strength of the gas-man's position, for it is the appliance that either does not or does appeal to the eye and taste of the buyer. It is the thing that the buyer actually seems to see before he buys. Therefore, if the gas-interests are go-

A nimble dollar spells prosperity

ing to hold their position in the field of the use of heat for domestic purposes, in the kitchen, in room-heating, water-heating, etc., the gas-man must look-to and depend-upon the appliance-manufacturer as his means of defense; means whereby to retain as well as gain domestic business.

The day has certainly passed when the appliance manufacturer is not to be recognized as a factor of unbounded importance in the gas-field, and while it is the case that the appliance-manufacturer is dependent upon the gas company for an element that makes the sale of his gas-appliances possible, yet this very same gas-appliance-manufacturer, unlike the gas-company, "has two strings to his bow," for if the gas-man is not as considerate of him as he should be, the gas-appliance manufacturer has but to swing his factory to the manufacture of electrical appliances, using the "carcass" (as the expression goes) of his appliance, much as manufactured for the gas trade, in which to house his electric element.

Already a number of manufacturers of gas-appliances are also either at present manufacturing electric-appliance to meet the very same type of demand for which they have been constructing gas-appliances, or are quietly preparing so to do.

It must already be known to the gas-man that already several of the gas-range manufacturers are putting out electric ranges. In fact, one range manufacturer has so perfected his electric product, we are told, as to make the heating element almost non-destructible, in that it does not take on color when the current is turned on, but the element remains black, guaranteeing against *overheating* of the element which is a destructible factor.

It is going to be impossible to prevent very keen competition between the electric and the gas interests. More and more will hydro-electric generating of current develop, with which will probably come lower domestic rates for electricity in certain districts, as water-power is hooked-up here and there throughout the country.

All of this is not written as a "scare" matter, nor should fear enter into the heart of the investor in gas securities, for in a great many of the large company cases securities are made doubly secure by the coming together of gas and electric interests. In many cities this has already been the case. The point is, how shall the gas-man hold his ground, and to this the answer is, make your "Service" right and the appliances as convenient, attractive, and efficient as possible. The *means* to this appliance matter is the appliance manufacturer, and the *way* is for the gas-men to willingly, not grudgingly, encourage the appliance manufacturer by properly compensating him to the full worth of his inventive genius, his practical experience, his knowledge of construction, shop management and manufactures, by paying him a good reasonable return on the constructed appliance, thus

giving the manufacturer the needed cash with which to operate to best advantage, his laboratory, his drafting room, his pattern shop, and all that comes thereafter in the processes necessary to the bringing out of appliances the like of which could not be excelled in other fields.

The model kitchen of today is the pride of the home. Pride used to center in the parlor, the conservatory, or some other section of the home, but now in the great majority of cases it is the kitchen.

Our illustration, kindly loaned by the American Stove Company indicates how the manufacturers of refrigerators, kitchen cabinets, and even kitchen tables are playing to the taste and desires of the woman-of-the-home. It likewise indicates how the gas appliance manufacturer is seeking to do his part, for a very important feature shown on the gas range, perhaps the feature of major importance visible to the eye, is the thermostatic control of the oven heat, a feature that in popularity is wide-spreading throughout the industry, one that has become the subject of many a national advertising campaign.

Since the gas-man must look to the appliance manufacturer for the means wherewith to sell his gas, he should make no mistake. Time is rapidly flying by and competition is sure to become more and more keen. Briefly, the gas-man should lend his every aid to the appliance manufacturer.

FRIENDSHIPS AND THEIR VALUE

WHILE the general purpose of our columns is that of bringing to the fore features that are essentially of the industry, we cannot forego the satisfaction that comes to us through handing on to others some of those teachings which make for the best in community and business life.

We do not believe that friendships should be formed for the purpose of commercializing the result, at the same time friendships in business circles are helpful in many directions and should be coveted.

Somewhere we noted the following which would seem to fit into this very subject.

"Where would most of us be without our friends? The example or encouragement of a friend has been the making of many a life. How many dull boys and girls have been saved from failure and unhappiness by discerning teachers or friends who saw in them possibilities that no one else could see, and of which they were themselves unconscious? Those who appreciate us, who help to build up instead of destroying our self-confidence, double our power of accomplishment. In their presence we feel strong, equal to almost any task that may confront us. The feeling that some of those around us, especially those among them who have achieved success, believe in us unreservedly—the consciousness that they think we have ability to work our way and to make ourselves felt in the world—is a wonderful tonic, a powerful stimulant to our successful endeavor."

If "luck" comes to you, it is through some sensible thing you have done or said

Features of the Industry

*The Days of Prodigal Waste in the Natural Gas Industry Are Over. Burner Efficiency
Important to Conservation*

HEARKING back to the opening chapters of natural gas history, one finds that natural gas in those days-gone-by, as even in some instances in these later days, occupied the position of a *side-issue*, it not being the gas that the prospector was after, but oil was his objective. When his obtaining oil was impeded or interrupted in any wise by flow of gas, his desire was to release the gas and rid himself of it, after one fashion or another.

I quite well remember as a boy that the meat-man would give a piece of liver without charge, or would give sweetbreads without cost to a customer who might ask for either, placing no value upon these. It was the early time idea of getting rid of those things for which there was not a recognized market, just as the oil man desired to rid himself (sometimes doing a friend a favor) of the gas which he did not want and for which there was no established market, but that his friend might use.

It is not at all surprising that the natural gas business from its various angles is in a state very trying to present-day gas managers, who are honestly desirous of rendering service with gas, but who find it next to impossible, or at least very difficult to change the current of thought and understanding in the minds of gas users who knew the earlier facts and whose upgrowing young people have lived in the same atmosphere.

In the days of knighthood, the difficult tasks were sought by aspiring knights, and in these days the same type of men are anxious to tackle the more difficult gas problems. These are they who will prove to be the Moses type of men, they who will lead the industry out of bondage.

In these days one cannot sweepingly say that *all* ranges, either for manufactured gas or natural gas should have open tops, since the inventive genius of man is not limited in its ability to plan application. Where heat cannot be economically held back under the cooking-top, forcing it to find radiation through the top, to the cooking vessel, as it can not be in the *ordinary* closed-top range, then the open top is to be preferred and urged by various gas interests.

All must acknowledge that for quick, speedy, service in instances when immediate direct heating is required, the open grid where the flame acts immediately upon the bottom of the vessel is preferable, but where the cooking is to be of some duration, then that the closed top, as specially constructed, only on a few special

types of ranges fills the bill admirably. An extra open grid, we understand, may be had with these special closed-top ranges, for *instant service*, if desired.

In view of the fact that natural gas must be conserved and in view of the fact that the future of the industry is a manufactured product or a blending of manufactured and natural products, and consequently in view of the fact that a low pressure range with properly positioned burners, and otherwise scientifically constructed, must become the universally used appliance, why not NOW go more actively at the transition which must come and thereby forestall, rather than to wait until the new form of gas, whatever it shall be, is the universal gas, allowing in the meantime discomfort, annoyance, inefficiency, etc., to rule supreme, and the life of the gas-man to continue a deplorable one because of annoyance and the complaints of a complaining public.

We are very glad to find a number of the old and well established gas-appliance manufacturing concerns of the manufactured-gas-field entering the field of natural gas with their splendidly designed, excellently constructed ranges and other appliances, for such an entering into the natural gas field will have a tendency to correct the designs as made by various of the old time natural gas appliance manufacturers, who will more quickly because of this competition, redesign their appliances to meet the oncoming low pressure, high burner standards of today and the future.

The old saying reads, "Competition is the life of trade." Let us say, as we now view the natural gas appliance situation, "Competition of the right (with the wrong, will be the life of the industry." We need these manufactured gas appliance men to come into this field.

Not infrequently has the statement been made that when the pressure falls, say, two ounces below a four-ounce standard, the heat value has been reduced to one-half of the former value. Instead of this condition, if we remember correctly, the heating value of, say, two-ounce pressure is only approximately nine-tenths of one per cent lower than under four-ounce pressure. Don't let the public get a wrong impression.

It is perhaps possible to conceive of a gas meter operating more rapidly under high pressure when the gas is rushing through the mains and is being burned prodigally, for then gas is rapidly replacing the rapidly consumed forerunning supply, but it would seem diffi-

Mental ease is a full brother to physical laziness

reconcile the statement of an Oklahoma attorney effect that with lowering pressure the speed of let was increased, and yet such statement has ade

r the Bureau of Mines and many gas interests discussing the subject of gas conservation, we still see coal stoves being heated with pipe-burners, open without air mixers, and it would seem that a survey of all appliances using gas should be made by gas companies and if needs be, under authority of public utility commissions to stop the use of gas under conditions

type of wasteful burner that was formerly used it is to a vast extent in use today under high pressure (inefficient in periods of low pressure).

The burner that must shoot a flame approximately two or two and a half inches high in order to be visible should as rapidly as possible be so replaced as to eliminate the extreme waste that follows.

In manufactured gas field the ranges used are with open tops, with a very few exceptions, and burners are placed from one to one and a quarter below the vessel, this being the proper distance for low pressure service, the kind of service that is rendered in natural gas practice.

There are two or three makes of gas ranges originally for manufactured gas, but are now offered for natural gas as well, that are put out with closed tops, with placed burners. These are an exception, and are in the ordinary closed top class. They work very well under low pressure, conserving the heat by top by certain forms of baffling. These are used when the statement is made that gas ranges for natural gas field should be built after the usual type of open top manufactured gas ranges.

March 28th, 1922, the United States Supreme Court affirmed the "penalty discount" phase as both valid and enforced in the State of Oklahoma, indicating as we understand it, that four ounces pressure been established as a standard distribution pressure for natural gas, that the following penalty discounting of gas company charges are allowable to the consumer if the pressure falling below the agreed upon standard.

We understand correctly under this ruling if the pressure is three ounces pressure, the consumer pays five per cent of the bill, if two ounces, he pays fifty per cent of the bill, if one ounce, he pays twenty-five per cent of the bill, and pressure should fall below one ounce, he would pay nothing.

Such a sweeping discount would seem unreasonable and in view of the fact that as appliances are made for sale and are in use, wherein cooking is done with as low as one ounce pressure, or that pressure is falling below four ounces of pressure would only affect those in communities who have built upon the old principle of low burner

and with the old type of closed top, the appliance rather than the pressure being at fault.

We agree that a reasonable pressure should be maintained by the gas companies in view of the fact that on their lines are installed numberless appliances sold either by or without objection of the gas company, which cannot be operated on anything but fairly high pressure. Yet the "penalty discount" as set forth would not seem a matter of equity.

If in the nature of its business the gas company cannot supply gas at former pressures or with uniformity of pressure above some rather low standard, then it is certainly the duty of someone to do readjust matters as to make the appliances fit the new condition of things. We are not saying whether the burden of raising burners on ranges and the employing of open tops on the older types of ranges not built with the latest types of closed tops should fall upon the gas company or upon the public, but we believe in view of the fact that low pressures must be the future of the business. Proper changes might as well be made now as later on when certainly they must be made.

However, the field should not ignore the past helpfulness that has existed through the services of many of the gas appliance manufacturers who have especially built for the natural gas trade. They built for the field as it was, and to meet conditions the gas companies had created. We believe these same concerns will fall in line to build for the conditions as they are and will be.

These manufacturers should study well the construction of the manufactured gas range, and those among these old time natural gas appliance manufacturers who do this will not lose out, even with the new gas range competition coming in. It will be the old-timer who will not revise his ways and his designs who will lose out.

Is the "penalty discount" as approved justifiable? Is high pressure in these days profitable? Is the natural gas appliance as formerly and still constructed for high pressure in view of the economies accomplished through low pressure and high burners justifiable?

If it be true that economies as best are accomplished so far as domestic appliances may be concerned, by short flame, making necessary a burner placed further below the vessel and a quarter below the vessel, and at the same time pressure with an atmosphere of air, it will tend to conserve gas, but will it also conserve gas generally, as answer to fluctuating pressures, which pressures at times are very low, and at times are very high, reasonable objection to the adopting of the penalty for making a gas company to conserve its statement regarding its desire to render acceptable service and to conserve fuel?

Is to meet the low pressure situation, and adjust an appliance conservatively, better than to require that it fall upon the gas company to adjust them, and then be met in view of the fact that the latter the allowed rates for gas as stated by many companies has been in order that acceptable service may be rendered, which cannot be rendered where we are just more than one gas?

One of the best things a salesman can learn is how to make a long story short

CARBON BLACK INDUSTRY

Economic Aspects of the Industry, and Uses, As Well As Production Figures, Are Here Given

THE carbon-black industry is an economic factor in the development of new gas fields. This industry can easily be successful in new areas that are sparsely populated and at long distances from markets and that present other unfavorable conditions. Its one requirement is a sufficient supply of natural gas, and in fact an isolated area where there is a sufficient supply of natural gas in an ideal location for carbon-black plants, because there is no domestic demand for the gas. The best illustration of the carbon-black industry as an aid in the development of new and remote natural-gas fields is furnished by the Monroe field in Louisiana. About five years ago only a few wells had been drilled in that field in an unsuccessful search for oil. Owing to its remoteness from large cities and communities there is little demand for the gas for domestic use, and this field has therefore been a fertile one for the carbon-black industry, as shown by the quantity produced there.

In the interest of conservation the Department of Conservation of Louisiana has formulated rules requiring the extraction of gasoline from the gas before the gas is burned in the carbon-black plants. As a result most of the carbon-black plants are operated in conjunction with the gasoline plants. The gas used in the carbon-black plants in the northwestern part of the field is too low in gasoline vapors to warrant their extraction. In West Virginia and Wyoming also the gasoline is recovered from some of the gas that enters the carbon-black plants.

Owing to the depression in the rubber industry during the early part of 1921 the price of carbon-black at that time declined to about 8 cents a pound and some was sold at even lower prices. By July 1, however, the price again advanced, and by the end of the year it reached 10 and 11 cents a pound. At present there appears to be a shortage, which in some places is causing prices to range from 12½ to 15 cents. The rapid return to normal conditions in the latter part of 1921 has probably removed most of the product in storage.

As natural gas is pre-eminent as a domestic fuel, much has been done to conserve it for that use wherever possible. The drastic legislation against the carbon-black industry that has resulted from the desire to conserve the gas has forced the industry out of some States entirely and has had a tendency to retard its expansion.

The estimated total output as given by E. G. Sievers of the United States Geological Survey was 14 per cent greater than in 1920. The following table, which shows the output by States, is based on reports from nearly all the operators.

	Plants	Pounds	Value	Average Price per Pound	Average lbs. per M feet	Gas used
Kentucky.....	2	2,697,075	\$ 215,822	8.0	1.8	1,518,763
Wyoming.....	2	519,400	37,521	8.9	.5	869,000
Oklahoma						
Pennsylvania..	3	573,225	38,707	6.8	.9	629,492
Montana						
West Virginia.	21	23,909,000	2,088,000	8.7	1.7	14,312,800
Total for 1921	41	58,632,700	5,347,050	9.1	1.2	49,431,855
Louisiana.....	13	31,034,000	2,967,000	9.6	1.0	32,101,800
Total for 1920	35	51,321,892	4,032,286	7.9	1.3	40,598,978
Total for 1919	36	52,056,941	3,816,040	7.3	1.0	49,896,235

The outstanding features of the carbon-black industry in 1921 were the increase in production of 7 per cent in Louisiana and the decrease of 10 per cent in West Virginia, as compared with 1920. The center of the carbon-black industry is thus definitely placed in Louisiana. In the earlier days of the industry the center of production was in Pennsylvania, but afterward it shifted to West Virginia, which was long the leading producer. Then, as the supplies of natural gas in the eastern fields declined and new fields were developed in Louisiana, the carbon-black industry migrated to the new territory where the supply of gas was large and cheap. The year 1921, however, was the first in which Louisiana contributed the greater part of the production in the United States. In Oklahoma, where production had ceased in 1920, one plant was operated in 1921.

Owing to the development of abundant supplies of natural gas Wyoming also attracted the carbon-black industry and became a large producer, but legislation has dealt a severe blow to the industry in that State, as is clearly shown by the large drop in production.

The average yield of carbon-black per thousand cubic feet of gas consumed was slightly lower in 1921 than in 1920, although the efficiency of some of the plants had been materially increased. The yield in 1921 ranged from 0.2 to 3.5 pounds, and the maximum was 1.5 pounds higher than the maximum in 1920.

Its Uses:—Although carbon-black is used for many purposes, it is especially adapted for use in the manufacture of printer's ink, which, according to opinions of those engaged in the industry, consumes approximately 20 to 25 per cent of the total output. About 30 to 35 per cent is used in the rubber industry, where it serves chiefly as a reinforcing agent. Carbon black is also employed for a great many miscellaneous purposes, such as the manufacture of stove and shoe polish, paints and varnishes, phonograph records, black leather, bookbinders' board, buttons, carbon and other black and gray papers, typewriter ribbons, carriage cloth, celluloid, electric insulators, cement colors, crayons, drawing and marking inks, artificial stone, and black tile. A considerable quantity of carbon black is exported to be used for similar purposes abroad but more especially for printer's ink.

It is a science to be able to forget faults. Constantly dwelling on the acts of meanness or of malice, the peculiarities of people, and the disagreeable things they do—these are the things that warp your mind and stall the smile in your soul.

Advertising, by speeding up the turnover, permits production on a larger scale

field and of the Mid-Continent field should meet
and to each other the right hand of fellowship
and so far as possible solve the common
problems that confront the industry, no matter in what
line individuals may be engaged in serving to the
the greatest good ever produced by nature, the
number of us all.

of expressing any undue optimism. I may state, however, that the public, who are the users of our utilities through their representatives in municipal public service commissions and their legislative and executive branch powers of regulation, are developing a broader knowledge of the public service corporations and their relation to society upon the content and welfare of the entire representative community. It is also my conviction that we gradually began to realize the value of natural gas both as a fuel and as a service. I believe this to be due largely to the increasing supply of natural gas received upon the gas-using public, the increasing rate of use by the consumer, the increasing economic obligations and second to the contribution on the part of the gas men in having

The question of conservation of gas is more properly the correct use of gas in each case, requiring more and more careful consideration on the part of both producers as producers and distributors and of the public as gas users. The matter of using natural gas in the best manner so as to produce the best results has been given very careful consideration and study by practically all of the companies engaged in the business during the year and also by the Bureau of Standards and Bureau of Mines. The Bureau of Mines has from time to time issued bulletins showing results of their studies and these have been widely distributed by the various companies. The question of improved fuel appliances and fixtures for domestic use and the proper adjustment of these now in use has also attracted much attention and called for careful thought and study. In this connection I desire to recommend to the Association that a committee be appointed to serve during the coming year whose duty it shall be to collect the existing data and, if possible, evolve a type or types of range and fixture which if the Association deems advisable it may recommend for future use. In making this recommendation I am fully aware that I am venturing very far and I have no desire to compare myself with a comparison committee anything near so good as I am sure that it is, but it seems thought that the Association can best handle this question at least in the context of making recommendations which can be adopted or rejected as they see fit.

The Committee on Publications of the Association of which Mr. H. L. Hays, Director of Public Relations of the Union Trust and Savings Corporation, is chairman, has also rendered a service during the past year. In addition to the Association and the Institute, generally, the committee has supervised the publication of the *Association Magazine* and has endeavored to make it an interesting readership, particularly through the use of the *Association of 1913* and the *Association of 1914*.

One of the important services of the Institute is to generalise these materials for publication in the various national and international phases of the movement. It has endeavored to do this by its efforts to secure the publication of abstracts of the Association's transactions in various languages, to secure the publication of the *Association of 1913* and *Association of 1914* in various languages, and receive the abstracts of these publications in the House of Monks where they are made available to the foreign and foreign communities, and to the various national and international phases of the movement.

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SELLING ROCHESTER COMPANY'S STOCK

WILLIAM GOSNELL

THE gospel of being sold to a proposition before you can successfully sell others is being demonstrated every day, not only by the regular selling force, of the Rochester Gas and Electric Corporation, but by other employees who firmly believe in the company and its policies. When an employee has such a conviction it is inevitable that others will be imbued with the same enthusiasm.

A reputable banking house of Philadelphia recently offered to take over enough stock to furnish the company the amount of capital required for the year 1922, but we believe this would not be to the advantage of the company, as it would leave our patrons in Rochester and adjacent territory "out in the cold," and to secure any of the stock a premium above par would have to be paid. This and other offers were turned down for the reason that we feel the local ownership of our stock is advantageous to our customers and of course to the company.

Our policy of giving the public whom we serve either directly or indirectly the opportunity to furnish the capital required to meet the needs of a growing community, has been justified by the fact that we have sold five half-million blocks of our 7% preferred stock in the last three years.

From March 1 to April 18 subscriptions have been received for 3,706 shares of stock which oversubscribes the present issue by 311 shares. The sales for this period represent over 100 per cent. of the amount of stock sold during the whole of last year, a comparison which shows that this security is continually growing in popularity, and that there is a general resumption of business as money rates become lower and conditions begin to approach normalcy.

A Public Utility Stock such as ours, with the element of safety so strongly intrenched in it, combined with the largest return consistent with safety, is being appreciated by conservative investors.

Prizes for the month of March were competed for by the sales force and also by the employees of the company generally, and the results obtained by the prize winners were very gratifying.

A copy of a local paper containing one of this Company's stock advertisements crossed the world and finally landed in a city of China where it was observed by a Mr. Mahoney who was so impressed with the attractiveness and security of this Company's 7% Cumulative Preferred Stock that he wrote to a local bank asking them to purchase a number of shares for him.

The Investment Department on the ground floor of our Clinton Avenue Office was placed where it would be most convenient for our patrons to get information relative to the Company and its capital requirement.—*By courtesy Rochester Company.*

CUSTOMER OWNERSHIP

How Local Investors' Money Assisted Towards Avoiding Bank Panic.

THE customer ownership or local securities selling department of a good-sized electric service company not long ago helped substantially to overcome a potential financial panic in a Western city. A number of small banks had failed and there were rumors prevalent regarding the larger institutions which caused great uneasiness among their depositors. Affairs had reached a point where deposits were being quietly withdrawn and it was feared that there would be runs on the big banks, with calamitous results. The manager of the Company's investment department was in close touch with the situation and observed an unusual increase in the sales of the preferred shares of his organization. He learned that deposits were being taken out of the banks and placed in the Company's securities both as an excuse for withdrawals and on the theory that funds would be safer so invested than in the banks. After a conference with the Company's officials the investment department salesmen were instructed to inform every prospective investor that the Company had implicit confidence in the soundness of the banks, would maintain its own deposits in the customary amount, and wished to decline orders for purchase of its securities from people who were acting principally to withdraw deposits. The banks were advised of the Company's action toward stabilizing conditions. The initiative of the Company was credited heavily in the successful avoidance of what appeared to be an impending crisis.

YOUR JOB

YOUR job is the best job you ever had. It commences where all of its predecessors—whatever their compensation—left off, and is thus nearer tomorrow than they.

Your job is the path which leads through the morass of routine mediocrity, up the sanded slopes to the sunlit peaks of success.

Your job, to carry you furthest, requires the fire of ambition and the light of steadfast ideals.

Your job is your life during the greater number of your waking hours. Dare you hold it lightly? May you at once be false to the job and true to self?

Your job will serve you well in return for your respect and honest devotion—ask of it what you will. It will provide food and shelter; it will give you a fire-side for dear ones. It will instruct you, and educate your children. It will give you the fellowship of good books and eventually offer you, in mellow years, the leisure for the enjoyment of travel, art, music—dreams.

Your job—when your time comes for passing on—will have chiseled your record on the monument of time.

And other men shall judge you, today, tomorrow and hereafter, by that inscription.—*Courtesy "Men's Wear".*

Heed this: "PREPARE!"

AROUND THE BELT

New Wells, New Pipe Lines, New Contracts, Addresses and Estimates. A Fund of Valuable News Gathered for the Journal Through Many Sources.

TRADE PERSONALS

Long E. M. of the Indian Territory Illuminating Co., Pawhuska, Okla., is with the Pawhuska Gas Company for the summer, assisting in reducing gas loss.

Charles E. is now First Vice President and member of the Charles E. Noble Oil & Gas Company, Okla.

R. C. Manager of the Sapulpa Division of the Natural Gas & Electric Company, has been elected member of the Sapulpa Chamber of Commerce. W. H. who is connected with the Oklahoma Electric Company, Oklahoma City, Okla., as Gas Engineer, has been appointed Chairman of the next Court of Honor.

Harry of Emlenton, Okla., has been elected member of the Oklahoma Natural Gas Company of

Ark. A. E. has been elected to the directorate of the Arkansas Natural Gas Company, Little Rock.

W. Thomas, formerly with the Hale Gas Mixer, is now connected with the Sterling Petroleum Corporation as Field Manager, operating in Elk, Kansas.

W. E. B. has been elected President of the E. Noble Oil & Gas Company, Tulsa, Okla.

August, Karl, connected with the Ohio Fuel Supply Co. for some years as Civil Engineer, on the State Engineer's engineering department, is now Bureau of Internal Revenue, Washington, D. C., Gas Valuation Section.

Paul is a new member of the directorate of the Arkansas Natural Gas Company, Little Rock, Ark.

ELECTED

OKLAHOMA. Important. Officers of the Oklahoma Gas Company recently elected are as follows: Heaver, Chairman; President, E. A. Ritts; Treasurer, J. W. C. Sharp; Vice Presidents, J. C. Kett, Secretary and Treasurer, R. S. Callen; A. J. Kinnear, Assistant Secretary and Treas-

urer. Tulsa. Officers have been elected by the directorate of the Charles E. Noble Oil & Gas Company as follows: President, E. B. Preston; First Vice President, and Treasurer, Charles S. Avery; Second Vice President, A. H. Carter; Secretary, Mack Ryan; Assistant Secretary, Treasurer, R. B. Martin.

INCORPORATED

COLORADO. Denver. The Mutual Shale Oil Company has been incorporated with a capital of \$1,000,000. Among the incorporators are: E. W. Cook, and A. C. Sells.

Pueblo. The Union Wave Oil & Gas Company is a new corporation having offices in this city. Among those interested are E. E. Prowser, A. E. Platt, and C. E. Lantz. The concern has a capitalization of \$250,000.

MISSOURI. St. Louis. The Empire Natural Gas Company, incorporated under the laws of the state of Delaware, with a capital stock of \$12,000,000, has been incorporated in Missouri with a capital of \$150,000, the shareholders being the Bankers Trust Company of New York City, M. R. Bump, Manchester, N. H.; J. D. Creslin, Brooklyn, N. Y.; E. E. Blackburn, Westfield, N. J., and others.

OKLAHOMA. Okemah. The Okemah Gas Company has been incorporated with a capital stock of \$75,000. Among those interested in the new project are R. H. Williams, J. E. Davis, and J. B. Hunkley of Holdenville.

WEST VIRGINIA. Salem. The Randolph Oil & Gas Company, \$50,000, has been incorporated by Ernest Randolph, Jennings, Randolph, E. E. A. Davis, John R. Dennison, Green E. Morrison, Lincoln D. Lowther, Salem, Richard D. Marx, Charlestown.

Sutton. A recently formed organization is the Star Basin Oil & Gas Company. The following are the officers of the new concern: Ross E. Stuart of Charlestown, President; Judge Isaac Fisher of Sutton, Vice President; Carl Davis of Charlestown, Secretary and Treasurer.

PER CUBIC FOOT-RATES

KANSAS. Abilene. The Washburn County Gas Company is asking permission to increase its rate 3 cents per thousand in this city.

Make this: A life while making a living Live one day at a time

NEW YORK—*Alden*—The Republic Light, Heat & Power Company has increased its rate 40 cents per thousand, and is now charging 75 cents per thousand less a discount of 5 cents per thousand. A minimum charge of \$1.00 per month has been established.

Batavia—The Republic Light, Heat & Power Company has established a new rate of 75 cents per thousand for fuel, light and power purposes, less a discount of 5 cents per thousand. A minimum charge of \$1.00 per month is also in force. The company operates in this city, and as well in Akron, Alexander, Attica, Corfu, Alden, Batavia, Bethany, Clarence, Covington, Darien, Elma, Lancaster, Marilla, Middlebury, Newstead, Pavilion, Pembroke and Stafford, N. Y.

OKLAHOMA—*Ramona*—The Oklahoma Gas Company has made effective the following schedule of rates: First 1,000 ft. the rate is to be \$2; next 149,000 ft., 55 cents; next 350,000 ft., 40 cents, and 25 cents for all over 500,000 ft.

PENNSYLVANIA—*Colona*—The Crescent Gas & Oil Company has increased its rate from 45 to 50 cents per thousand in this city, as well as in Monaca, Monaca Heights, Wireton, Glenwillard, and Sheffield.

GENERAL

ARKANSAS—*Alma*—A franchise has been granted S. H. Hale under which he will be permitted to operate a plant and distributing system in this city.

FLORIDA—*Oldsmar*—According to report tests are being drilled in a section a mile distant from this town. It is claimed that the rock formation has been verified by the state geologist, and that indications for oil and gas production are favorable.

ILLINOIS—*Marion*—The Marion Gas Company recently gave a dinner to 100 citizens for the purpose of demonstrating how natural gas may be used efficiently and economically. The items on the menu which required heat in preparation were: twenty apple pies; 2½ gal. of oysters, escalloped; 50 lb. of lamb, three pecks of potatoes, salad dressing, brown gravy, coffee, fifteen cans of peas, creamed. When the cooking operations were completed the meter registered 240 cubic feet, costing about 11 cents.

KENTUCKY—*Covington*—The Union Light, Heat & Power Company has been assessed at \$3,250,000 for the current year.

Taylor County—The Tampico Gas Company, it is reported, has completed a 3,500,000-foot gasser on the Latimore farm, near Campbellsville, at a depth of 400 feet.

LOUISIANA—*De Soto Parish*—The De Soto Oil & Gas Company is drilling in section 12-11-16, three miles east of Logansport.

NEW YORK—*Canisteo*—A good gas well was recently completed on the farm of R. Dennis near this village. The gas was found at a depth of 525 feet.

Dunkirk—The Republic Light, Heat & Power Company, is reported to have leased large acreage in the Abbey-Forestville field, in which lately several producing gas wells have been completed.

New York City—Empire Gas & Fuel Company, subsidiary of the Cities Service Company is offering through Halsey, Stuart & Company, Hallgarten & Company, Goldman Sachs & Company, and Lehman Bros., \$40,000,000 fifteen-year 7½ per cent. refunding mortgage convertible bonds.

OHIO—*Ferguson*—The Westova Oil & Gas Company is drilling on its lease located near this town. The company already is operating several small wells in this section.

Muskingum—In section 1, Harrison township, the J. L. Swingle Oil & Gas Company has a light gasser in the Berea grit at a test on the C. E. Albright farm. In section 2 in the same township, the same company's second test on the O. W. Harrop farm is a fair gasser.

Washington County—In Lawrence township the National Oil & Gas Company has completed a test on the Thomas McGregor farm. It is a gasser in the Keener sand at a depth of 1,270 feet.

Bartlesville—The Kansas Natural Gas Company has moved its general offices to this city, having formerly been located in Independence, Kan.

Bristow—The Transcontinental Oil Company has completed a gasser estimated to have a production of 25,000,000 cubic feet in its test in section 23-16-9, Bristow district.

Enid—The Enid Division of Oklahoma Gas & Electric Company is co-operating with the Lions' Club in its campaign to make Enid "The City Beautiful." The slogan, "Every Lot a Garden Spot", is being carried out by planting flowers and shrubs wherever possible around the company's properties.

Kay County—The Cosden Oil & Gas Company has disposed of one-half the interest in its gas rights to the Blackwell Oil & Gas Company in section 13-26-1. The sale does not include casinghead rights.

Mangum—Negotiations are being conducted here by the Chamber of Commerce which if successful will result in bringing natural gas to this city from wells in the northeastern section of Green County.

McIntosh County—Wigton & Handler have completed a 5,000,000-foot gasser in No. 6 on the Jackson lease in section 9-12-14. This company also has a 2,000,000-foot gasser in No. 5, the same section.

Get used to this: Turning up with a smile—and smiling even when you are turned down.

Okla. County. The Southwestern Petroleum Company has a large gasser in section 10-24-1w, Tonkawa. This is the company's No. 3 test on the Murray.

The gas was found in the second sand from 2,125 feet.

Omaha. The Holdenville Gas Company has started auction work on the pipe line from the Yeager which will bring the gas supply to this city. A line was obtained recently by the company to operate distributing system in this city.

Polk County. The Kewanee Oil Company in No. 1 the Harrison lease, section 18-15-14, Bald Hill district reported a gasser with a yield of 1,000,000 cubic feet 1747 to 1762 feet.

Okla. City. The construction of a gas pipe line extending from the Bliss-Tonkawa field to this city, a distance of eighteen miles, is under consideration by the Kay Gas Company of this city.

Nowata County. R. H. Smith and associates have tested a good gasser in their test on the Lewis Clark in section 23-7-7.

Phelps County. No. 6 of the Graham Production unit on the Ridge farm, section 30-1n-8w, at a depth 500 feet is a good gasser.

Tex. The Mid-Continent Oil & Gas Association has invited by the local Chamber of Commerce to share a building. The new structure as planned will cost a neighborhood of \$150,000.

Waller County. A good gasser has been completed by A. Henderson of Tulsa, in section 34-17-18, gas came in at 26 feet in the sand.

PENNSYLVANIA—Allegheny County. In the Duell well, Robinson Brothers have completed a test on the Suckles farm. It is a small gasser in the Berea. In the same district Beeler and McEvoy's test on the Lehart farm and Neely and Company's test on the Lehart farm are both gasers.

In the Unity district the Allegheny Valley Oil & Gas company has a gasser in the 100-foot sand at a second test on the A. G. Hockberg farm.

Jefferson. In its test on the Connor farm on Armentia tract, the Bradford County Oil & Coal Corporation is a fair gas production. The company has large gas in this section under lease which will be thoroughly tested.

Lawrence County. One-half mile south of Sycamore, in Center township, the Manufacturers Light & Heat company has drilled a test on the Dora Garner farm near Pittsburgh coal, delivering gas at that level.

In Center township the Carnegie Natural Gas Company has a gasser in the salt sand at a second test on the Lehart farm.

In Center township, the Federal Oil Company has a test on the Sanders Bros. farm is a gasser in the Berea sand.

The Marshall Oil & Gas Company's second test on the M. S. Hostutler farm in Springhill township, has been completed in the Big Injun sand and from a casinghead test shows a daily capacity of more than 8,000,000 cubic feet.

In Wayne township, the Philadelphia Oil Company has a gasser in the Bayard sand at a test on the J. H. Knight farm.

In Center township, the Manufacturers Light & Heat Company has a Gordon sand gasser at a test on the M. L. Morris farm.

Pittsburgh. Division chiefs recently appointed to the Engineering Department of the Philadelphia Company by Ralph Rainford, Chief Engineer, are: W. C. Boyd, assistant engineer, street railway division; P. A. Young, assistant engineer, mechanical division; M. R. Scharff, assistant engineer, valuation division; H. L. Fullerton, assistant engineer, electrical division; F. N. Gormley, assistant engineer, underground division; N. O. Smith-Peterson, assistant engineer, drafting division; Fred I. East, assistant to chief engineer.

Washington County. In South Franklin township the Carnegie Natural Gas Company has completed a test on the S. A. Dague farm, getting a fair gasser in the Nineveh sand.

The No. 4 well on the A. C. Bungard farm in Canton township, two and one-half miles northwest of Washington, drilled by the Hughes & Day Oil Company of Dormont, is estimated to be producing 2,000,000 cubic feet per day with a rock pressure of 30 pounds.

In Canton township Hughes & Day have completed a second test on the A. C. Bungard farm located 2,500 feet southeast of No. 4 is a gasser in the salt sand.

Located one-half mile northwest of the Hall farm pumping station, Wallace Brothers have drilled a test on their own farm through the fifth sand. It is a fair gasser in this formation.

Hughes & Day have a light gasser in the fourth and fifth sands at a test on the Dr. George Kelly farm.

Waynesburg. The Herrick Run Oil & Gas Company has a 1,500,000-foot gasser on the A. J. Dye farm in Springhill township. The gas was developed in the Big Injun sand. The Peoples Natural Gas Company has contracted for the output of the well.

TEXAS—Cameron County. N. L. Smith and associates on the Burnett property is producing around 10,000,000 cubic feet in the line. The gas comes from a depth of 2,000 feet.

The Humble Oil & Refining Company has a 20,000,000-foot gasser in No. 2 on the Burnett lease.

Dallas. The International Gases Company, Dallas Gas Company, it is reported, will be considerably extended during the current year. It is said \$125,000 will be expended on new mains.

Adopt this: Think before you act—but don't think too long

Palo Pinto County—Harris and associates have completed their No. 1 test on the Aller Company tract which after being shot is yielding 4,000,000 cubic feet of dry gas at a depth of 3490 feet.

Three Rivers—The Three Rivers Glass Company, it is reported, has contracted with the Three Rivers Production Company for 9,000,000 cubic feet of gas per month. The price agreed upon is 10 cents per thousand.

WEST VIRGINIA—*Calhoun County*—In Sheridan district, Martin Crowley has completed a test on the Camden-Sommers farm; it is a light gasser in the Big Injun sand.

On Anna Maria Creek, Sheridan district, Thomas Crowley has drilled his second test on the Samuel Commers farm through the Big Injun sand and showing for a 500,000-foot gasser.

Charleston—The Diamond Oil & Gas Company has been incorporated in this city with a capital stock of \$50,000. Among those interested in the new project are: L. B. Whitehurst, F. M. Driggs, I. O. Willard, G. C. Irvins, J. E. Springston, Charleston.

The United Fuel Gas Company has been assessed at \$2,460,000—consisting of \$678,302 tangible property and \$1,781,698 franchise. This is a decrease from the assessment of the previous year.

Doddridge County—On Broad Run, in McClelland district, the Hope Natural Gas Company's No. 1 on the Roy McCoy farm has been completed in the Gordon and is a gasser in that formation.

Gilmer County—The Gilmer Center Oil & Gas Company has a gasser in its No. 1 test on the Henderson farm in Center district.

Gilmer County—On Rock Camp run of Tanners Creek, DeKalb district, Rinehart & Company have now completed in the Big Injun sand a test on the D. M. Miller farm. It is a 1,000,000-foot gasser in the Blue Monday sand.

In DeKalb district the McCall Oil Company's test on the D. M. Miller heirs' farm is a gasser in the Big Injun sand.

Harrison County—In Simpson district the Gray-Davis Oil & Gas Company has a Big Injun gasser at a test on the Effie Brown farm.

In Coal district the Light & Heat Company has a fifth sand gasser at a test on the S. A. Nixon farm.

Huron County—The Puritan Oil & Gas Company in Ripley township, near Norwalk, reports a good gasser on the Hoose farm.

Kanawha County—The William Bowers No. 24 well on Witchers Creek was completed by the Kanawha Valley Producing Company and is producing 700,000 cubic feet of gas.

In Big Sandy district, the United Fuel Gas Company has a gasser in the salt sand at a test on the Estaline Campbell farm.

Lewis County—In Courthouse district the Hope Natural Gas Company has gone back to an old gasser on the William McCudden farm and drilled it to the fifth sand, getting a light oil producer in the lower formation.

Lincoln County—In Carroll district the Laurel Development Company has a small gasser at a test on the W. T. Black Sons farm.

In Carroll district the Cambridge Carbon Company got a 3,000,000-foot gas well in the salt sand at a test on the Thomas Ray farm.

Marion County—In Paw Paw district the Owens Bottle & Machine Company developed a good gas pressure in the Big Injun sand at its test on the Charles C. Floyd farm.

Marshall County—In Liberty district the Marshall-Preston Oil & Gas Company has a Gordon sand gasser at a test on the Susanna Kerns farm.

Ritchie County—In Murphy district, about one and one-half miles west of McFarlan Station, on the waters of Laurel Run, the Hope Natural Gas Company has a 500,000-foot gasser in the salt sand at their test on the C. E. Carnes farm.

Roane County—The Sarah F. Taylor No. 4 well on left Hand creek has been completed by the Columbian Carbon Company at a depth of 1,692 feet and is producing 1,800,000 cubic feet of gas.

Wood County—In Williams district the Hudson Oil Company's test on the Pugh heirs' farm is a gasser.

WYOMING—*Greybull*—The Wyoming Gas Company is carrying its gas line across the Big Horn River and also across the Greybull River, ten-inch and fourteen-inch lines being employed. The line conveys gas into the Greybull refinery.

VERA CRUZ—*San Cristobal*—In a drilling near this city the original purpose of which was the finding of oil, a good flow of gas was uncovered at a depth of 1785 feet.

POPULARIZING BY ADVERTISING

NOT infrequently is it the case that we run across some manufacturer or dealer who has the idea that advertising is overrated as a means of concentrating the attention of buyers sufficiently to warrant the expenditure.

The National Trade Association instituted a campaign for the purpose of arriving at facts pertaining to this very subject. Questionnaires were sent out and the results showed as follows:

Question 1. When you go into a store and find two articles of a similar nature for sale at the same price, one of which is a nationally advertised article, which do you purchase?

Practice this: Holding your tongue between your teeth so it won't cut your throat.

Answer: 87.6 per cent. buy the advertised article; 3.6 per cent. buy the unadvertised article; 8.8 per cent. were non-committal.

That only one person in approximately 30 deliberately buys the unadvertised article is significant, but here is a definite proof that the manufacturers are really creating a goodwill by their advertising which is valuable to them and their dealers.

Question 2. When you find two similar articles for sale at different prices, the unadvertised article being priced lower than the advertised, which do you buy?

Answer: 60.6 per cent. buy the advertised article, 24.2 buy the unadvertised article; 15.2 per cent. non-committal.—*Retailers' Journal*.

Tepco

PORCELAIN ENAMELED

STOVE PARTS

...QUALITY FIRST...

The Enamel Products Company.

CLEVELAND, O.

COMPANY MEMBER OF AMERICAN GAS ASSOCIATION



HEIGHT, 28 INS.
WEIGHT, 100 LBS.

Johnson
Gas Appliance Co.
CEDAR POINT, IOWA

The Radio Craze

Opens up an urgent market for lead pots for casting Radio Battery parts.

DEALERS

Sell all the automobile and Radio Battery Service stations and Radio appliance people this efficient

Johnson No. 300
150 lbs. Lead Pot for
\$25.00

Johnson Powerful Atmospheric Bunsen Burners mean a quicker melt, with less gas due to the Patented Direct Jet Regulator.

No outside pressure necessary—gas main pressure is ample.

Johnson Direct Jet



Liberal discounts to Dealers. Send for catalog.

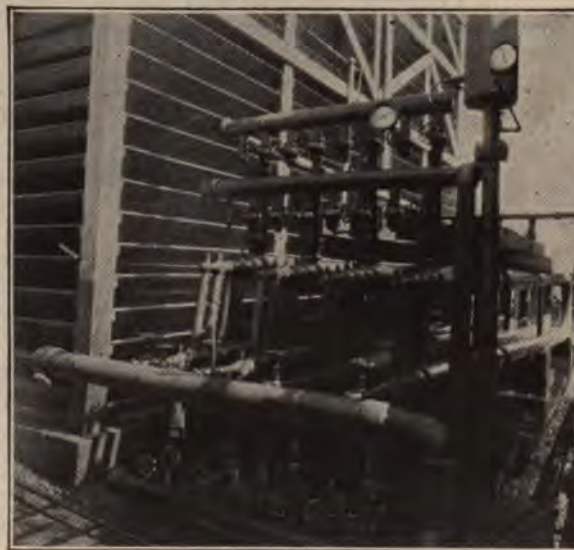
Hildebrand Patent Heat Exchanger

The Hildebrand Patent Heat Exchanger, of which we have exclusive control, consists of seven or more pipes, ranging from 1½" to 8" diameter, nested into each other and bent into an elongated "U" shape. Welded cross connections permit of a continuous, counter-current circulation of hot and cold oil, in alternate channels, with the hot oil in the outside channel.

This Heat Exchanger has a very high coefficient of heat-transfer, and is used in the Hope Gasoline Recovery Plants.

This is only one of many devices invented and perfected by us in our fifteen years of active service in the Natural Gas and Petroleum Industries.

Data on request.



Consulting
and Contracting
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Natural Gas
and Oil.

HOPE
ENGINEERING & SUPPLY CO.
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THE NEW HEATER

That Revises All Standards for---



EFFICIENCY

SAFETY

DEPENDABILITY

CONVENIENCE

The Wales Heater is the newest development in gas-fired boilers. Flameless combustion of gas, under fan pressure, provides far-reaching economies and refinements not found in any other type of heater.

Entirely Automatic

The Wales is entirely automatic in operation. Temperatures thermostatically controlled. Gas flow automatically ceases when required temperature is attained; resumes when temperature falls below desired point.

Positively Safe

No gas can pass through burner unless pilot light is burning. Cutting off of water supply automatically stops gas flow.

Efficient Operation

The Wales burner operates only when necessary to attain or maintain desired temperature. During intervals of non-operation there is no flow of air through boiler. Heat is retained as in thermos bottle. Condenser radiation (see opposite page) utilizes all the heat. Burner construction and combustion principles give greatest thermal effectiveness.

This heater is practical for domestic heating, hot water storage or industrial use where hot water or low pressure steam are required.

Let us send you detailed information and attractive Dealer Proposition.

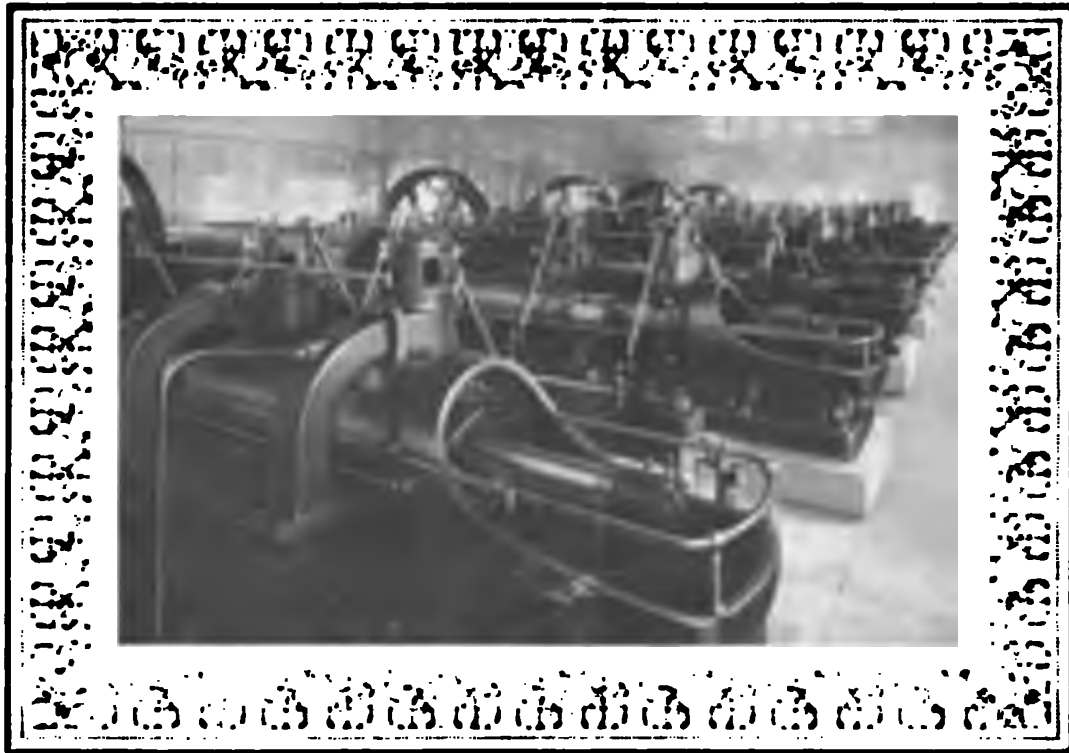
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JULY 1922

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Merchant and Gas Industry

THE subject of co-operation between gas company and merchant has become one of the liveliest themes of the hour. It is discussed at gas conventions; it has been written upon in the trade press; it has challenged the attention of various of the gas managers, both upon the Pacific and Atlantic coasts, and at points between these two extremes of the country.

The merchant has in many instances experienced that frigid chill which permeates the atmosphere when a matter unwelcome is up for discussion. This condition because of the fact that the gas-manager as a rule has in the past not been in sympathy with commercial intercourse between the gas producing company, its commercial sales department, and the merchants.

The electric interests have wisely sought to make electric-merchandisers out of as many types of merchants as might be rounded up and induced to merchandise electrical appliances and equipment. The gas-man, frequently, has tried to hold as far as possible, the merchandising of gas appliances within his own hands.

The merchant has recognized that there is a demand for gas-appliances, partly arising from natural conditions and partly on account of promotive work done by gas companies. However, as we have said, he has recognized commercial possibilities in gas-appliances and has been ready to handle the same as he would handle other merchandise, frequently however, not as he might have handled these, with a knowledge of that which makes for best results, as he would have done had the gas companies evinced a desire to co-operate and had sought his co-operation in return.

It surely is natural that the merchant in view of the former attitude assumed by various gas interests should have either ignored the gas company, or displayed resentment, the attitude of the gas company having been often responsible for the condition.

We are now in a new era; it is the era of "get-together"; it is the era of co-operation, the outcome of which will be bigger and better and more profitable conditions than have existed during the era of the "closed lid", as one might term it, wherein a gas company has felt that it could be exclusive and self-centered.

Bigness and broadness are the things that make for growth, development, and crowning achievement, conditions that are taking strong hold upon the gas interests.

We believe the wave of co-operation with the merchant which has started both in New England on our Atlantic coast, and upon the Pacific coast, and that has been sweeping east and west toward the center of our country, the trend of which wave is co-operation between merchant and gas company, will rapidly find its way into practically all of the gas-served communities of this country. The day is ripe for just this sort of thing, men are bigger and broader in their views than they used to be, and as a result ours will be a prosperous and long-lived industry as compared with a gradually shriveling existence that must have surely come had not the breadth of vision found its way into this industry that has had the record of being one of the most conservative, in fact ultra-conservative industries in the country.

Let us drink a toast to the new condition, namely, that of honest co-operation *not simply expressed co-operation* between gas companies and merchants handling gas-appliances.

Lucius S. Bigelow

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ANNUAL CONVENTION NATURAL GAS ASSOCIATION OF AMERICA
and EXHIBITION OF SUPPLY MEN'S ASSOCIATION
Louisville, Ky., - 1923

FROM THE EDITORIAL MAIL BAG

MAMMOTH BUILDING GAS HEATED

IN Los Angeles, Cal., one of the finest new buildings is known as the Brownstein-Louis Building which is situated at the corner of Eighth and Figueroa streets. This building presents a difficult heating problem, even though located in the Los Angeles climate, owing to the fact that approximately four fifths of the building has glass exposure. However, notwithstanding this feature, and that there are in the building 210,150 square feet of floor area and nearly three million cubic feet of area to be heated, a gas-fired steam heating system has been adopted, the plant comprising two hundred and twenty sections of cast iron low-pressure gas-fired heating equipment. "Peerless" steam boilers were selected in units of forty-four sections, each unit being set upon a concrete foundation some eighteen inches high, the pipe joints all welded, save the bracker connections.

No screw fittings other than flange unions were used throughout the entire equipment of steam piping. On the contrary, acetylene welding was the system adopted, two hundred and sixty welded joints being the outcome.

This is a very simple plant to operate, it being necessary but to start the electric fan, turn on and light the gas; the equipment is automatic in operation. The following is a description in detail of the plant as installed:

Four stacks cast iron radiation, 3,200 square feet; weight, 27,000 pounds.

Maximum fuel consumption, 8,800 cubic feet per hour, 750 B. t. u. gas.

Maximum steam pressure by gauge, five pounds.

Multiblade type of blower with a rated capacity of 122,000 cubic feet per minute.

Electric motor for driving blower, 40 horsepower, direct current.

Electric motor for driving pump, three horsepower, direct current.

Maximum vacuum at pump, five inches.

Vacuum pump, R&B reciprocating.

The following further description we gratefully acknowledge from the hand of Mr. E. J. Protheroe, General Agent of the Southern California Gas Company of Los Angeles:

"Steam is generated in the boilers and passes directly to the radiation or vent coils and is returned to the boilers when condensed by means of a vacuum pump.

Fresh, washed air is driven by the fan directly through the vent coils and plenum chamber and is conveyed by ducts throughout the entire building.

This gas fired heating plant is unique in that it is automatic in operation both as to steam control and temperature control. Thermometers are located on each of the five floors of the building and when anyone registers 71 degrees Fahrenheit, compressed air is released in a line leading to a damper in an air duct, causing the damper to gradually lessen the flow of heated air and proportionately increase the flow of cold air, thus maintaining an even temperature on each floor. Coincident with this a thermostatic air controlled steam valve closes and cuts off the steam supply to a section of the vent coils; this in turn causes a gas steam valve of the usual type to cut off the supply of gas to one or more boilers, as each vent coil is cut off, one boiler is also automatically cut off.

There is a gas burner under each section and each burner is adjusted to consume 40 cubic feet of gas per hour.

The greatest or maximum consumption of gas in this plant is, therefore, 220x40=8,800 cubic feet of gas per hour.

Gas is supplied to these five boilers from the gas company's city system of mixed gas of a heating value of 750 B. t. u.'s per cubic foot. The rate charged is the regular domestic rate or A-1 schedule, a block rate from 76 cents to 61 cents per thousand cubic feet.

The plant was put in service the first of January of this year and its success is well indicated by the following letter received by the Southern California Company from the Brownstein-Louis Company:

Southern California Gas Company,
Los Angeles

Gentlemen:

Today we sent you a formal letter of acceptance of our Gas Fired Steam Heating System in our new building, at Eighth and Figueroa streets, but we feel that we want to go a little further in expressing our appreciation of the system itself and the manner in which you handled this entire proposition.

You have made a very handsome installation and its operation, to date, is more than satisfactory. You had a most unusual problem on account of the large area to be heated and the excessive exposure of glass windows.

We will heartily recommend your services to any prospective builder who may require, and want you to know that it will be a pleasure for us to have you bring any order to our establishment who may be interested in seeing this equipment.

During the past two years since Mr. Protheroe, the Southern California Gas Company has installed similar plants of the same type for the following institutions:

Remember that the misfortunes hardest to bear are those which never come—Lowell

County Hospital, San Bernardino, Calif.
 Reynolds Hotel, Riverside, Calif.
 Woodward Hotel, Los Angeles, Calif.
 Planet Hotel, San Bernardino, Calif.
 Union Bank & Trust Company Building, Los Angeles
 (a ten-story office building).
 Webber Baking Company, Los Angeles, Calif.
 American Agar Company, Glendale, Calif.
 Here is inspiration for other gas interests.

A LIFT UPWARD

Denver is one of the Henry L. Doherty Interests—
 A Manufactured Gas Company.

THE fact that Mr. Clare N. Stannard of the Denver Gas & Electric Company has stepped into the position of Vice-President and General Manager of the company is another evidence of what may be expected if one sticks by his job, is efficient, painstaking and dependable, and providing the employer has the good sense to recognize the fact



CLARE N. STANNARD

that the employe is of that type which it would seem most advisable to retain.

When we first knew Clare N. Stannard he was Commercial Manager of the Denver Gas & Electric Company, and our picture published herewith is one that was taken of Mr. Stannard at a period when the National Commercial Gas Association movement was getting well under way, of which association he was later president. The time was quite before that when that association held its convention and exhibition in the city of Denver.

Mr. Stannard has stepped up the line just as he has deserved, and with Mr. Stannard's promotion, the following other changes have taken place; R. G. Genwith the Denver Company for twenty-four years. We are expecting to hear fine things of the Denver Company is now Manager of the Commercial Department; Roy G. Munroe, formerly the Company's Industrial Fuel Expert, is now Assistant Commercial Manager, while G. A. Hamilton takes the position of Industrial Fuel Expert with J. R. Hunting as new assistant in the Industrial Fuel Department.

The advancement of the several men whose names we have given, came about with the death of Mr. W. J. Barker, who for years has had the conduct of the company, Mr. Stannard being its secretary. Mr. Frank W. Frueauff, of New York, one of the efficient presidents in the early days of the N. C. G. A. is President of this excellent Denver Company.

Back of Mr. Stannard's connection with the Denver Company he was with the Binghamton Gas & Electric Company of Binghamton, N. Y. His early education as a cadet student studying banking, and the rudiments of gas, electric light and street railway departments started him in the right direction.

It was in 1898 that Mr. Stannard went to Denver when the company was controlled by the Henderson-McMillan interests, the same which owned and operated the Binghamton plant.

Mr. Stannard started in Denver as a company collector; from this his ability led to various promotions until in 1906 he was elected Secretary.

Among the association offices that have been held by Mr. Stannard he has served as President of the National Commercial Gas Association, Vice-President of the American Gas Institute, and is now a director of the commercial activities of the National Electric Light Association, but best of all is Mr. Stannard's stability made manifest in the fact that he has been pany under Mr. Stannard's management.

BROKEN YEAR AND HOW TO MEND IT

In part, the following is an address of George Otis Smith, Director, United States Geological Survey, Washington, D. C., before the National Conference of Social Work, Division of Industrial and Economic Problems, Providence, R. I., June 26.

THE present lack of public anxiety over the coal situation is not at all novel. The popular feeling toward coal has always been a sort of Irish variety of chills and fever. The average citizen doesn't get thoroughly warmed up on the coal question until he begins to get chilly. Thus it happens that a midsummer coal shortage is likely to be a lukewarm affair.

Yet disregard of unpleasant facts does not stave off disaster. Paralysis of industry and transportation on a country-wide scale is the natural outcome of a coal

Greatness does not consist in never failing, but in rising every time you fall—Confucius

re it carried to the extreme that can not be many distant. Serious as the present situation is, however, there are fundamental problems more insistent than even the pending differences between us and employer. These basic problems affect not only coal industry to some degree, but especially numerous branch. Clear up the economies of the industry and a lasting settlement of labor controversy become a possibility. Leave these questions untried and industrial peace can not be expected to last the usual two year armistice.

it coal producers and coal consumers alike need sense of the business rather than compromise before parties to the controversy, and in this reform it is absolutely essential that the mine workers should rate with the mine operator. Too long have the owners treated the coal business as private property, too long have the labor leaders with no less selfish attitude obstructed every move for under-
 1. efficiency and economy. The people's coal costs
 2. ached because of the mistaken idea that mine owner
 3. and worker can continue to fight over contracts
 4. indefinitely. Cheaper coal and larger earnings will come
 5. when engineering is emphasized more and bargaining

crisis of engineering, the coal industry has a bad case translated into human relations: poorly doing mines mean poorly employed miners. A working year would seem at first glance, dear to mine owner, mine worker, and consumer alike and get it.

feasible with our soft coal mines is not so much idleness as the broken month, the broken week, and the broken day. The running time is broken into pieces, for mine operation is not simply seasonal or intermittent. In that theoretical mine of the future, the average mine of the country, we find not a longer month than June, by 25 per cent, and longer than April by 10 per cent, and yet the average in a normal November is only 19 to 21 working days. And irregularity creeps into the working week, for Friday and Saturday are no better days than Monday. Granted that the same other industries suffer the handicap of seasonality, our problem, and the national problem, is the betterment of the working time of coal, and especially bituminous coal mines.

eight working year for a reduced force is the one method of bringing about the lower wage and the larger annual earnings both of which are needed. It is largely by reason of the low rate of wages that coal costs too much, and on economic grounds it may well be questioned as to whether the producer should be paid a wage out of all cost with the wage of the consumer. Can a \$5 a man afford to buy coal mined by a \$10 a day worker?

general welfare is tied up with a regular supply of work and larger earnings for those who work. And the responsibility for mending the

broken year needs to be shared by the many who can help thus to bring about the economic and social benefits from coal that the Nation's industry can afford to pay, and from mining towns of which the Nation need not be ashamed.

GEMS FROM RODERICK

WHY did the Atlantic Monthly usually stay free from the responsibilities that were asked of other literary magazines? It was a college graduate who counts his wells by the flock.

"Fall for what? another person?"

"That stuff written by K. Leroy Preece who says he is a geologist entitled 'Hunting for Oil in Oklahoma'—the most absurd far-fetched story ever imposed upon the public through a reliable publication."

And that's the way Chisholm and I talk about Kieche's literary effort.

Here are some gems from it . . . Now they have retired to expensive homes . . . where they may sit on the front porch idly, in their stocking feet, while their wives have dined alone, up and rolled to town behind six cylinders to buy whatever hits their fancy . . . Absurd! For J. King, president of the Kingwood Company, not only wears shoes, but frequently socks during cold spells. Recently Dr. J. J. Deane, of Deane Food fame, was seen in Kansas City wearing shoes. J. B. Janson, his partner, who lives up in the home neighborhood of the Atlantic Monthly, well it looks peculiar for J. B. so better lay off him. J. J. Matney, president North Baltimore Company, won't be bare shoes long before he brought in his first col. well, presumably after he quit the newspaper business, and still is to be seen with em. While James G. Evans, president Evans Press & Gum Company, was late getting the shoe habit, nevertheless is a stickler for them now. And Dr. W. C. Ayer, always wears em when he can get em large enough. W. B. Fine, of the Fine Interests, invariably wears shoes when the ground is either snow or ice, or frozen mud.

• • • It is a wonderful wonder to find it is not unusual for a man to live in 200 years to see the light for a birth. • • • George the Harvard man, who may have always wanted to be a New England donkey jockey until he found a job at the Parkway Hotel at Cambridge and then gave up the idea of the donkey jockey.

1. I have been in the United States for about 10 years. I am a citizen of the United States.

[illegible]

Another question . . . I was in the town I was able to hear the church bells pealing . . . It was like a thousand voices shouting

Rather be criticized for falling down on your job than for laying down on it

into a voodoo chant. Probably 'twas M. C. French and E. H. Poe, secretary, Wooster Oil Company, rejoicing over their new 1,000-barrel wells.

Another good one: "* * * The negro is never a drifter. * * * The negro is pre-eminently social * * *." Did meet some companionable people, didn't he?

But here's the crown jewel of the collection: "* * * Once the decision is made to drill, a rig gang can erect a 72-foot derrick in a few hours. A huge bit is then dropped from the top of the derrick. Like an arrow it sticks in the ground and the well is 'spudded in' * * *."

My Gawd, what's the Democratic party coming to in Oklahoma?—*The Oil Weekly*.

WHICH DO YOU LACK?

IN seeking data from employing concerns, Detroit clubs asked, what in particular is sought in an employee's make-up, when under consideration? Over a hundred concerns replied, and here is the boiled-down list.

Knowledge—appearance—personality.

Sincerity—courtesy—conciseness—enthusiasm.

Study this list. Which do you lack? Study yourself and find out! Cultivate what you lack. Don't fool or pamper yourself in the belief that you have them all. Perhaps you have but two or three; if so, you are far below par.

Louisville, August 1st 1847

M. W. Kempf

To The Louisville Gas Company, Dr.

STATE OF INDEX,

ON	Thousands.	Hundreds.	Tens.	Units.
May 1	35	900		
	34	000		
	17	000		

Cubic feet of Gas, at \$ $3\frac{1}{2}$ per Thousand, \$ 595

20

565

Received Payment,

Aug 3 20 1847

Regulations of the Company.
All Gas bills paid within five days from date, 5 per cent discount.
All bills not paid within ten days from date, the gas will be turned off.

AN OLD GAS BILL

THROUGH the courtesy of Mr. Alfred Fowler, Superintendent of the Salem Gas Light Company of Salem, N. J., we are in receipt of an old bill dated 1875. The rate of gas was then \$5.00 per thousand cubic feet, with a discount of 20 per cent for "prompt payment." At the bottom of the bill is the announcement that the office hours are 10:00 a. m. to 3:00 p. m., furthermore, that the gas will be "stopped from the premises" if the bill is not paid in ten days.

There are people who think that the gas company of today is arbitrary; but how about a rule to turn off the gas in ten days from presentation of bill unless the charge is paid? It was, indeed, an arbitrary attitude to say that unless paid within the ten-day limit, the customer would lose both the 20 per cent discount and the privilege of having gas in his premises.

LOW-PRESSURE GAS BURNERS IN OIL-FIELD BOILERS

BY M. P. YOUKER AND G. S. BREWER

A Report on the "Use of Low-Pressure Gas Burners in Oil-Field Boilers" has been completed by M. P. Youker and G. S. Brewer, of the Bartlesville Station. The report gives complete results of tests made with eleven low-pressure gas burners in an experimental boiler. The investigation has shown that low-pressure gas, vast quantities of which are now being wasted, can be successfully used to generate steam for drilling purposes. Results of the work show that the multiple Bunsen type of burner is the most satisfactory type tested. For any given gas pressure the capacity of a gas burner will depend upon the number and size of the gas jets used. The report is being prepared for printing by the Mid-Continent Oil and Gas Association, of Tulsa, in its Year Book.

—A. G. A. Abstract

Luck means the constant and complete use of your own resources

Matters of Franchise

"Indeterminate Franchise"—Indefeasible Street-Rights

By J. W. DANA

611 Locust, Kansas City, Mo. C. Kansas City, Mo.

epithet "indeterminate" franchise is a most unhappy conage to convey the idea we are considering. The word "indeterminate" has no well defined technical or legal meaning. An indeterminate equation in algebra is one having so many un-

known quantities that it cannot be solved.

An indeterminate residue is a number alone. An indeterminate sentence in criminal law is one in which the judgment of the court fixes the minimum and the statute fixes the maximum period of confinement. The word is not found in law dictionaries or encyclopedias. Until the Wisconsin legislature coined the term, it was regarded altogether too uncertain to use in legal parlance. It meant, not settled, not defined.



J. W. DANA

The greatest part of the questions and vex that perplex mankind depend upon the real uncertain use of words, of which is the "indeterminate" idea, which these are made to

risk of the Indiana Commission, says that it "granting a place to conduct a business."

same Court of Wisconsin defines it as a franchise subject to the conditions and limitations of the statute in which it is used. It is obvious and "indeterminate" has no particular meaning in connection with the statute in which it is more likely to conceal than reveal the thought

in mind, if there be any. This unfortunate term has doubtless been largely responsible for the sloth with which public utilities, as well as the public and the legislatures, have accepted the proposition.

The word "franchise" is also an unfortunate term. There are all kinds makes, brands, styles, fashions and forms of franchises. There is the franchise to be a corporation and carry on certain lines of business, known as the primary franchise, derived directly from the State. Then there are numerous grants both to corporations and individuals directly from the state or indirectly through the subordinate agencies of the State. These are classed as secondary franchises. Then there are a great number of individual and personal rights such as the franchise of suffrage, the franchise of free speech, and many others. But all are presumed to be derived directly or indirectly from the sovereign.

In the popular mind the word "franchise" carries an indeterminate idea, vague, meaningless, intangible and inarticulate, but always presumed to be of very great value and carrying special privileges, powers and immunities to the grantee. Therefore it must be taxed heavily and great and valuable consideration must be demanded for it and its use must be carefully restricted, limited and regulated to prevent abuses. Now all this is imagination, pure hogswogswog and results in crippling essential industries, impairing the service to the public and reflecting higher rates than necessary.

Now the right to be a corporation and carrying on a public service business is derived directly from the State. The municipalities and subordinate agencies of the State have no power, jurisdiction or authority to confer or deny, enlarge or diminish that primary franchise right. The right of the public, as to corporations of this and other states, to furnish to the people generally, public utility service, is a primary franchise right coming directly from the State for the purpose of carrying on the State's function of furnishing public utility service. This right is a legal or proper one derived from the municipalities of the State. The State is the real party in interest, the primary moving party interested in and responsible for the development and growth of its public utility industries and the maintenance and continuity of its public utility service as well as the reasonableness of the rates charged. Any municipality

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in contemplation of law this whole public utility business is a sovereign state function and the furnishing and maintenance of public utility service is a duty incumbent upon the State which it owes to the citizens at large of the entire State, not merely those who happen to be permanent or temporary inhabitants or voters of the city where the utility is doing business. It is a "public use" in the constitutional sense. It is only upon this theory and ground that the State, either directly or through its municipalities or administrative commissions may condemn and take, either by the exercise of the power of eminent domain or the police power of rate-regulation, the property of a public utility or the use thereof. Condemnation is the taking of the corpus of private property for *public* use. Rate regulation is the taking of the "use" of private property for *public* use. In either case, the Federal Constitution requires "due process of law." Due process of law means and includes the application of evidence for the determination of value which must measure that "just compensation" to be given for the property or the "use" thereof taken for *public* use. But it is only for a *public* use that private property can be taken by the state at all. Therefore, it is exclusively the business of the State, delegated to private enterprise generally under the wise and stimulating public policy of the American Commonwealths and Nation. It thus appears that the right or franchise to carry on the business of a public utility comes direct from the State itself.

The right to use the public ways of the State and its municipalities in the carrying on of a public utility business may be a part of the primary franchise granted direct by the State, or it may be a right conferred by general statute or special act, or such right may be a secondary franchise conferred by the State indirectly through the act of a political subdivision of the State by authority conferred upon such political subdivision by the State.⁶ But "the original source of power over both the streets and highways is in the state."⁷

It is this latter right which is known as the "indeterminate franchise."

Now in order to get a clearer idea of the thing, let us frame language which would confer the right. If it were the direct act of the State, it would read as follows:

**"AN ACT RELATING TO THE USE
OF PUBLIC WAYS BY PUBLIC
UTILITIES**

**"BE IT ENACTED BY THE LEGISLATURE
OF THE STATE OF.....**

"Sec. 1. That all public utilities as now or hereafter defined by the laws of this State, are hereby authorized and granted the right to use the public ways of this State and the municipalities in which

they are or may be doing business for the purpose of discharging their duties as public utilities."

If it were a municipal ordinance passed by authority of the legislature, it would read as follows:

**"AN ORDINANCE RELATING TO THE
USE OF THE PUBLIC WAYS BY
PUBLIC UTILITIES**

**"BE IT ORDAINED BY THE MAYOR AND
COUNCIL OF THE CITY OF HOPE:**

"Sec. 1. That all public utilities as now or hereafter defined by the laws of this State doing business in this city are hereby authorized and granted the right to use the public ways of this city for the purpose of discharging their duties as public utilities."

We might add to either of these, "during good behavior and subject at all times to regulation, supervision and control by the duly constituted authorities of the State, and subject at all times to the right of any such municipality to acquire such public utility in such manner as is or may be provided by law and subject also to the penal and criminal statutes of the State now or hereafter enacted." We might go on ad infinitum, adding other provisions, but all this is pure make-weight neither adding to nor detracting from the right to use the public ways granted by the State; nor enlarging or diminishing the sovereign powers inherent at all times in the State to regulate, supervise and control its utilities, their rates and service by the duly constituted authorities of the State; or to condemn, take and acquire such public utilities; or to oust them from the use of the streets and from the franchise to be a corporation and carry on a public utility business on account of bad behavior and default in the discharge of their public duties. Such sovereign powers are not only inalienable as a matter of general law without specific authority, but they are specifically reserved inviolate by the State Constitutions in many States.⁷

"Indeterminate" public utility bills have been introduced in many legislatures, but they are so long and cumbersome and carry so much superfluous, immaterial, *indeterminate* verbiage that they have usually "died in committees" for want of proper understanding of their merits.

Such bills (aping after the Wisconsin act) usually provide for surrendering franchises, rights, special privileges, et cetera, held or supposed to be held by the public utilities. These are altogether unnecessary under the statutes and constitutions of most States because of the specific reservations of the power of eminent domain and the police power contained in such constitutions.⁸ But they have created a mysterious fear, an indeterminate idea, in the minds of some public utility people

⁶ Sec. 3367, R. S. Mo., 1909.

⁷ *Owensboro v. Tele. Co.*, 230 U. S., 58, 67.

State v. Light & Development Co., 246 Mo., 618; 152 S. W., 67.

Iowa Tele. Co. vs. Keokuk, 226 Fed., 82.

State vs. Railway Co., 140 Mo., 539; 41 S. W., 955.

⁷ Art. 12, secs. 4 and 5, Missouri Constitution.

Art. 2, sec. 1, Oklahoma Constitution.

⁸ Art. 12, secs. 4 and 5, Missouri Constitution.

Art. XVIII, sec. 7, Oklahoma Constitution.

Put off until tomorrow only the things you should not do at all

may lose or forfeit something of value they have. Now, the simple, naked, legal, constitution is that no public utility in this or in most any state has or holds, or ever did have or hold any privilege, contract right or valuable interest in it from the exercise of all the sovereign power of the State, such as rate regulation, condemnation, and the civil and criminal jurisdiction of the State, the reasons alone stated.

It is possible for the state, either directly or a municipality duly authorized, to suspend temporarily by franchise contract a sovereign power, such as the power of eminent domain, the power of taxation or the power of rate regulation; such contract must be authorized by the legislature, it must not be prohibited by the Constitution and it must be in clear and unambiguous language, admitting of no doubt. To doubt the constitutional power, the statutory delegation of the municipal exercise of that power, is to doubt the result is that there are very few such.

None whatever in many States because of constitutional limitations such as above referred to.

Now that both the cities and the public utilities rates fondly cherishing the delusion that they have a franchise contract right of special privilege in rates, service, taxes or the municipal acquisition of plants are scheduled for a rude awakening on final test find such franchise grants ultra vires.

In connection it is interesting to note the fact, fully appreciated, that in most of the hard and leading cases that have gone to the Supreme Court of the United States involving the rights of public utility the principal question has been the authority, jurisdiction of cities either to confer or to regulate those rights and that most of these have been decided strictly construing delegated powers of the cities and denying assumed or implied powers to such cities.

In granting clearance of the underbrush, let us square back at the thing we are talking about. It is more or less than the perfectly normal right of all alike except a few public utilities to use the public ways in a perfectly proper, normal and legitimate manner in the carrying on of an authorized legitimate business, and, more, an essential industry, done in for and on behalf of the state in the performance of its duties to its citizens.

In other words the proper use of the public highways, streets and the use of the public streets and highways is something to be bought and sold, bartered for and auctioned off to the highest bidder, from which the public can economically or

legitimately realize an income or profit is altogether erroneous, unsound economically and legally, prejudicial to the growth of the community and discriminatory against one class of citizens, the consumers, and preferential in favor of others, the non-consumers.

Every dollar exacted and burden imposed upon the use of the public ways reverts back upon the consumers with interest and costs. It is a wholly erroneous conception of the purpose of public highways.

The Supreme Court of Kansas not many years ago said in a gas pipeline right of way case: "A public road, as a way of traffic and transportation, must, so far as possible, meet the demands of the people and is subject to be used for such purposes by any means not destructive of its use as a public thoroughfare. When such ways first came into use the means of travel were on foot or on the backs of beasts, later articles of traffic were transported by wheeled vehicles drawn by horses and oxen and that is the general method employed today. It could not, however, be held that the highway could not be used for the transportation of passengers and for the traffic by automobiles."

"The transportation of commodities on the highway is one of the uses for which it has always been maintained. The means, however, used by the gas company in the transportation of its gas are exceptional. A demand for this method has not heretofore existed in this State, but shall this fact alone deprive the defendant of the use of the highway for a usual and proper purpose, unless such use necessarily obstructs seriously inconvenience or endangers public travel?" "The use of a rural highway by a telephone company is not an additional servitude for which the owner of the fee can recover compensation." "It is variously defined or held to be for passage, travel, traffic, transportation, transmission and communication." "The use is not to be measured by the means employed by our ancestors or by the conditions which existed when highways were first devised. The design of a highway is broad and elastic enough to include the newest and best facilities of travel and communication which the genius of man can invent and supply. The public highway is maintained for the transportation of the commodities of the country and the means employed for such purpose need only be such as not to interfere with public travel to the extent heretofore stated."

Have we not reached that state of civilization where we can think of public highways in terms of the public use, public service and public welfare and not with reference to petty political power and pettiness? Have we not advanced far enough to look the truth in the face clear away the camouflage and high sounding meaningless verbiage, such as "indeterminate franchises" and call this thing what it really is, namely, street rights, public, feasible street rights. We can all recognize it by that name.

¹ See also *Ex parte Chicago*, 209 Fed. 333.

² *Ex parte Chicago*, 209 Fed. 333, 334, 335, 336.

³ *Ex parte Chicago*, 209 Fed. 333, 334, 335, 336.

⁴ *Ex parte Chicago*, 209 Fed. 333, 334, 335, 336.

⁵ *Ex parte Chicago*, 209 Fed. 333, 334, 335, 336.

⁶ *Ex parte Chicago*, 209 Fed. 333, 334, 335, 336.

⁷ *Ex parte Chicago*, 209 Fed. 333, 334, 335, 336.

⁸ *Ex parte Chicago*, 209 Fed. 333, 334, 335, 336.

⁹ *Ex parte Chicago*, 209 Fed. 333, 334, 335, 336.

When the State has created and maintains at great public expense a Public Service Commission and staff of assistants and experts clothed with plenary power to regulate and control public utilities, their rates, service, rules, practices, accounting, capitalization, financing and investments; and has divested municipalities of all such power and has required that Commission to fix and establish reasonable rates and provide for continuous and efficient service, it is time the State should recognize the proper use of the public ways by public utilities in the discharge of their public functions. In this and many eastern states, indefeasible street-rights are expressly granted or recognized by legislative enactment.¹² The Supreme Court of Missouri, construing the Public Service Act recently said: "He who reads that act and does not see a complete rounded scheme for dealing with the business of public utilities at every point where the shoe pinches the public or the utility, reads it to little purpose."¹³ In fact, and in constitution law the whole scheme of rate and public utility regulation is futile without indefeasible street-rights for the obvious reason that a public utility is entitled to amortize its investment out of earnings during the life of its term franchise;¹⁴ this is necessary because it has no assurance and no power to enforce the renewal of its term-franchise at the expiration thereof.¹⁵ Whereas, a public utility operating under indefeasible street-rights is entitled to earn only a fair return upon its investment, resulting in lower rates.¹⁶

Now, having come to recognize this right in its true and simple sense, let us point out its merits and demerits, if any.

1. It may be defined as a mere right to use the public ways in the discharge of an essential industry, during good behavior and subject to all the laws of the State until condemned or acquired by the State or municipality.

2. It is a right enjoyed by all other persons, natural and artificial, including railroad, express and Pullman companies¹⁷, telegraph companies¹⁸, telephone companies¹⁹, ferriers, pipe line companies²⁰, bridge companies, stage coaches, bus and hack lines, jitneys, inn keepers, hotels, banks, insurance companies²¹, elevators and warehouses²², newspapers and stock yards, of conducting a "business affected with a public interest," a public "use" business, subject to state regulation, all enjoying the common use of the public ways in the carrying on of their business. No other business is under such a handicap. Imagine

all these public industries coming to the cities asking the right to use the streets and continue business every few years—it is just as reasonable and more so, for the losses and injury to the public would not be so great.

3. It has been adopted in Wisconsin, Massachusetts, Indiana, Michigan, Arkansas, District of Columbia, Porto Rico, the Philippines, and all United States Government grants, and State grants to state-wide utilities such as telephone and telegraph companies.

4. It is in line with the progressive thought of the times and has been recommended by Public Service Commissions in practically all States, and by engineers, economists and financiers.²³

5. All public grants, either by the Federal Government, the State or its political sub-divisions, made without time limit, are held by the courts to be perpetual or indefeasible on grounds of public policy to avoid the confiscation of property and impairment of vested rights. "To say that the right to maintain these appliances on the public ways was only a license which could be revoked at will would operate to nullify the charter itself and thus defeat the State's purpose to secure a telephone system for public use. For manifestly no one would have been willing to incur the heavy expense of installing these necessary and costly fixtures if they were removable at the will of the city and the utility and value of the entire plant be thereby destroyed. Such construction of the charter cannot be supported either from a practical or technical standpoint."²⁴ The adjudicated cases all show that street-rights grants resulting in vested property rights are liberally construed by the courts in the interest of public policy, whereas short term-franchises purporting to limit or restrict the sovereign powers of the State such as rate regulation, are strictly construed against both the city granting them and the company claiming under them, thus showing a wise judicial policy of preserving both property rights on the one hand and the full freedom and integrity of the State's functions on the other.

6. The short term-franchise is an economic waste, compelling the destruction of much useful and valuable property at the end of the term;²⁵ the tearing up of the public pavements and ways; requiring high interest rates for investments; drives capital out of the industry and requires high utility rates to the consumers to amortize the investment during the term;²⁶ all theoretically pro bono publico, but the consumer "pays the freight" with interest and costs.

¹² Sec. 3367, R. S. Mo., 1909. *State ex rel Subway Co. vs. St. Louis*, 145 Mo., 551; 46 S. W., 981.

¹³ *State ex inf. vs. Gas Co.*, 254 Mo., 515.

¹⁴ *Brymer vs. Water Co.*, 36 Atl., 247.

¹⁵ *Denver v. Water Co.*, 229 U. S., 123.

¹⁶ See article by author in *American Gas Institute News*, March, 1917.

¹⁷ *Houston Ry. Co. v. Storey*, 149 Fed., 499.

¹⁸ Sec. 1763, G. S. Kan., 1909.

¹⁹ Sec. 1789, G. S. Kan., 1909.

²⁰ Sec. 1700, G. S. Kan., 1909.

²¹ *City of LaHarpe v. Gas Co.*, 69 Kan., 97.

²² *German Alliance Ins. Co. v. Kansas*, 233 U. S., 389.

²³ *Munn v. Illinois*, 94 U. S., 113.

²⁴ Report by Milo R. Maltbie, Chairman Pub. Serv. Com., 1st Dist. N. Y., pp. 25-28. *Development of Water Power*, Senate Document No. 147, Address: "Some Features of State Regulation of Pub. Util." by John H. Roemer, Wisconsin Com., p. 22. H. E. Hogueland, Rate Expert. Recommendations to Gov. Capper. Pund on Pub. Util., sec. 120. Address by Halford Erickson of Wis. Com. before Ohio Electrical Convention. Address by Judge J. L. Clark of Indiana Commission.

²⁵ *Louisville v. Cumberland Tel. Co.*, 224 U. S., 649; *In Re Kings County Elevated Ry. Co.*, 104 N. Y., 97; 13 N. E., 18; *Russell v. Sebastian*, 233 U. S., 195, 204; *Iowa Tel. Co. v. City of Keokuk*, 226 Fed., 82.

²⁶ *Denver v. Water Co.*, 229 U. S., 123.

²⁷ *Brymer v. Water Co.*, 36 Atl., 249.

Turn to this: Your wife's judgment when in doubt.

on the other hand, normal or indefeasible street rights are all this waste. It is economically sound, utility to finance itself on the lowest interest rate and complete state regulation of rates consists of a fair return and not the amortization of the entire investment within a short fixed term. A limited term franchise and the policy of regulation are so incompatible and irreconcilable that they both cannot stand together. We believe the courts will ultimately hold that the adoption of a policy of regulation and the requirement in a franchise that the service may not be discontinued without the consent of State authority and that the franchise be reasonable and only sufficient to afford a fair return on the investment supercedes and repeals franchises, and confers, by operation of law, indefeasible street rights.

Under the term franchise, if duly authorized, may suspend and suspend the exercise of the power of eminent domain thus barring the municipalities from condemning and acquiring the public utility in municipal ownership is desired, while the grant of indefeasible street rights is no bar to the exercise of the power of eminent domain and the acquisition of public utility plants by the municipalities. Property, like all other property, is held subject to the sovereign power of eminent domain and can be taken for public use by due process of law at any time.

The indefeasible right to use the public ways for the construction of utility plant construction is present and future generations, while the use of the public ways for the use and benefit of the present generation.

The public utility industries and invites the business and into the State. In fact, it is financially impossible to finance the construction, improvement of public utilities without the grant of indefeasible street rights. In most States, either by the grant of the legislature or by construction of franchises upon public utility corporations, indefeasible street rights are held by many public utilities.

The indefeasible right to use the public ways for the business and the permanent preservation of the investment in public utility is a fundamental principle underlying the whole system of rate regulation by commission. Without it, all rate regulation are fruitless and the maintenance of the Public Service Commission is a waste of money for the reason that a public utility, such as a gas company having an investment of \$10,000,000.00 under a 20 year term franchise would be amortizing one twentieth of that investment per year, which amount on an annual volume of \$1,000,000.00 sales would require an addition of ten thousand to the rate affording a "fair

return" on the investment. This amount the people must pay for the privilege of the "Home Rule" politicians having a perpetual row with their public service servants.

12. Term franchises usually carry unreasonable and costly requirements such as the ancient standard of "candle-power" gas necessitating the expenditure of much money to make the gas self illuminant, whereas, in the modern art gas is used for lighting in the incandescent mantle and is employed almost exclusively for heating and the Therm in either case is the only proper standard. We are all familiar with some old dinky horse-car line, some obsolete arc electric light lamp, or other requirement which costs large sums of money to maintain merely for the purpose of complying with some obsolete provision of a term franchise. All this is ultimately reflected in higher rates to the consumer and would be avoided under indefeasible street rights subject to full and complete scientific commission regulation.

If there be any merit to the term franchise, no one has ever advanced it. No one now defends it. The practice of granting term franchises obtained long prior to the modern policy adopted in some 47 states of rate and service regulation. It originated and flourished shortly after the decision in *Munn vs. Illinois*,¹ where it was held that the courts had no power to review commodity rates fixed by legislative fiat and the only relief was by appeal to the legislature. It was therefore adopted not as a sane business proposition but as a means of evading the harsh rule laid down in the *Munn* case in an effort to establish "contract" rates protected against impairment by the contract clause of the Federal Constitution.² However, at that time it was not commonly known to the bench and bar not to mention the general public that rate regulation was then and is now a sovereign governmental function always residing in the State and could not be suspended or bartered away by its municipalities except by clear constitutionally conferred legislative authority. It was also deemed necessary to have these term franchises renewable at frequent intervals so that the municipalities, then vested with power to deal with public utilities could readjust the rates and service conditions periodically. Thus it appears that under the modern policy of regulating these public utilities by state commissions there is absolutely no excuse for the term franchise.

But were our will was that to grant indefeasible street rights direct by the legislature would deny the municipalities their right to control their own affairs would violate that sacred doctrine of "Home Rule". The answer is that the municipalities never had that right. There is no such thing as imperium in imperio in the American scheme of state governments. The State is the supreme sovereign except such powers as are delegated to the federal government. The cities

¹ 94 U. S. 113.

² See 11, 12, 13.

derive all their powers from the State. The State gave, the State may take away.

Under the general law, the right to control public utilities and the use of the public ways reposes in the sovereign State. It was only temporarily, and to a very limited extent, delegated by the State to its political subdivisions, the municipalities. All the right the cities had in the premises in many States was to give "consent" to the state-created public utility to enter upon the State's public ways within such municipalities.⁸⁰ Certainly the city cannot withdraw its consent after millions have been invested for and on behalf of the State in the discharge of this essential business of the State by private parties.⁸¹

Finally, the granting or renewal of term-franchises by municipalities under the modern policy of State rate regulation is misleading to all parties concerned and fruitful of interminable litigation, charges of bad faith and public mistrust. All provisions of such franchises purporting to fix rates or service, establish values or capitalization, require investments or betterments, or prescribe accounting, or rules, regulations or practices, are ultra vires and disregarded by the state commissions, the courts, and the utilities themselves. It follows that the only thing the cities are now authorized to do is to give their "consent," in the first instance, to the utility entering upon their streets and commencing business; and that cannot now be done without a certificate of convenience and necessity from the commission. In law, the public utility enterprise is a tri-party arrangement, the State, the utility owner and the people. The city was temporarily merely the agent of the State. It now appears that the States have very wisely recalled to themselves the complete control of these essential industries. This is probably due to the fact that the granting of term-franchises by municipalities is one of the greatest causes of the notorious "failure of municipal government" throughout the United States.

If each of you will examine your Public Service Act conferring jurisdiction on your commission and then examine all of the acts of your legislature conferring powers upon the cities, and apply the rule of strict construction to the powers conferred upon cities so that they take nothing by implication and are given only such powers as are necessary for municipal government, you will find that the cities have very little, if any, jurisdiction over the public utilities of your several states. In many cases you will find that your cities have no more jurisdiction over public utilities than they have over actions at law or suits in equity.

Nevertheless, there are many public utilities in this and other states operating under term-franchises granted by cities, with or without legislative authority so to do, such power in many cases purporting to have been derived only from freeholders' charters and not from legislative authority, and, therefore, unauthorized and void. Such public utilities find it impossible to finance themselves under these expiring franchises with the re-

sult that they are embarrassed for capital to make needed extensions, betterments and improvements to their plants necessary to the maintenance of adequate and efficient service at reasonable rates.

It is, therefore, highly proper and timely that all States should pass curative legislation in some such form as above suggested; the net legal effect of which would be to "quiet the title" of its public servants in and to the indefeasible use of the public ways of the State and its municipalities in the proper discharge of the State's public service business.—By courtesy of Natural Gas Association.

A NEW GAS TURBINE

TESTS have, says the *Engineer*, now been resumed at the works of Messrs. Thyssen and Co. with the gas-turbine invented by H. Holzwarth.

The tests have been directed to the obtaining of a more economical pressure of the exploding gas; and it is reported that they have been largely successful, in so far as an effective pressure of 170 to 200 lbs. per sq. in. is now obtained, against 70 to 85 lbs. formerly. A further important improvement has been effected by shortening the time expansion, which is now one-tenth of a second, against one-third of a second in the case of large gas-engines making 90 revolutions per minute.

Great pains have been exercised on the discovery of the best form of turbine blade, and on the search for the right material. The ordinary steam-turbine blade could not be adopted, as gas-turbine blades have to withstand heavier forces than those of steam-turbines. The blades are fixed in the drum, in much the same way as in steam-turbine practice; but it has been found that the shrouding usually placed round steam-turbine blades tends to become loose if fitted to gas-turbine blades, on account of the difficulty of securely fastening it to the blades, constituting a continual danger when the machine is running. The top, base, and body, of the blade are therefore now made of a solid piece of metal (like De Laval turbine blades), with satisfactory results.

As regards the material of which the blades were to be made, exhaustive experiments were carried on with all sorts of steel and steel alloys of every degree of toughness; and soft electro-iron was ultimately fixed upon as being the most suitable material. Changes of grain were observed on blades made of any other hard or soft steel after short use, and there was also a decided tendency to split and peel; but blades made of electro-iron stood well up to extensive tests, and compared favorably with those of steam-turbines of an equal length of service. It is therefore expected that gas-turbine blades will last as long as do those of steam-turbines—always, of course, providing that the gas used does not contain an excessive admixture of water or steam, to cause early corrosion.

—By Courtesy A. G. A. Abstracts

⁸⁰ Sec. 3367, R. S. Mo., 1909.

To Help the Consumer

Efforts the Natural Gas Companies are Making to Help the Consumer get the Greatest Value from His Gas Service

W. H. MORRIS

General Manager, Natural Gas Company, Dallas, Texas

the content of this article, it should be borne in mind that the surest guaranty to success is a customer satisfied with the price that he pays for natural gas, and likewise satisfied that the serving him is putting forth its best efforts to



W. H. MORRIS

assure to him the greatest value from his gas service. Certainly, a better day has now come when more and more, the great thinking public whose composite judgment deliberately formed is almost infallible on any subject, realize, as do the utilities, that the relations between the utilities and the consumer are so intimate and interdependent that what is helpful to either is helpful to both, and what is harmful for one is harmful for all and the motto of a true owner, "One for All and All for One," their application.

Large investment necessary in natural gas service, the gas field and the point of consumption, are separated by long distances, thus necessitating expenditures for pipe lines, compressor and construction makes it impractical for one trader to alone, and so necessary funds are exacted from the public at large, and the result is a gas sold to the public in the cities to be natural gas is deliverable. On the one hand, a ready that service, on the other, the utility is a living return in order to be able to secure investing public funds for the large outlay in giving that service, and after all, whether the relationship is considered from the standpoint of the individual in the home, securing service, the standpoint of the great users, like a hotel

with its thousands of guests securing that same service, different only in degree, or from the standpoint of the utility furnishing that service, or from whatever standpoint, when you look through the form to the substance you find at last that it is personal, and the relations are between living, sentient human beings, and essentially the whole fabric of the relationship is direct and personal. It is, of course, the merest platitude to say that if you destroy the consumer you destroy the utility, and likewise if you destroy the utility you destroy the consumer, and so their interests are one, and this fact should never be overlooked.

The subject of this article. And no natural gas utility in the present day fairness and philosophy ever overlooks this fact, but, on the contrary, having it constantly in mind in all its activities, it regards its consumers of the first consideration, and so among the chief things in that consideration it is unparing in its efforts to help the consumer get the greatest value from his gas service. What these efforts have been, are, and should be, is the particular subject of this article.

Natural Gas at Home. Natural gas is a boon to the people whose privilege it is to enjoy the use of it, but in common with so many of the blessings of life it is often never fully appreciated in a community until it is gone. The realization that the quantity of natural gas now available is very limited, and is not inexhaustible is gradually dawning upon all thinking people. Herculean efforts have been made by the members of this Association to inform the people of the conditions affecting their natural gas supply, to the end that full cooperation of the public and natural gas companies should be directed in a real conservation policy in the consideration of which not the least factor is the efficient use of gas.

Conservation. As the greatest value will be realized by having the greatest period of time during which the customer will have the privilege of using natural gas, "Conservation" is of necessity the key note to the ultimate success of these activities.

It costs. The extent that a company can go in its search for gas, its expenditures for reducing waste in the field, on its trunk lines and distributing systems is measured largely by the price that is paid for its product. Many communities today are still using natural gas piped from hundreds of miles away, and paying therefore, a price per thousand cubic feet that, when

what you have to do so well that the Boss won't have to do it over again—The Lamp

fairly considered, is less than the amount necessary to cover expenditures that ought to be made for the proper maintenance and depreciation of the distributing system alone, with a large waste as a result thereof. It is quite evident that such conditions do not make for an extended life of the natural gas supply. This statement is by no means fanciful or theoretical.

A natural gas company that is receiving an unremunerative or non-compensatory rate for gas in its fight to survive will rock along with its system deteriorating, and with no more work on it than is absolutely necessary to keep going, thus resulting in excessive waste, among other things; and while it may not be particularly germane to the general subject under discussion, I may say that natural gas companies ought to receive a compensatory rate, not merely to pay a reasonable per cent upon its investment with all proper amortization allowances, on account of the great hazard of the business and the likelihood of sudden and complete failure of any gas field, but also to enable it to maintain its system so as to obviate as far as practicable all waste, and so as to give the most efficient service.

A reduction of waste commences in the gas fields where many of the companies, after years of unceasing efforts, have succeeded in practically eliminating open, outside lights and fires, and are gradually limiting the use of free gas by the tenants on leases to sane quantities per annum.

Legislation.—Legislation, when preceded by conditions tending to make the market price for natural gas somewhere near the price of competing commodities, has resulted in the limiting of the criminal wasting of immense volumes of gas in the field by operators drilling for oil and accidentally bringing in gas. There is much yet to be done in this regard, especially in the Mid-Continent field. In general, loss and waste are least where the price of gas is highest. This is only another proof that gas must first be made worth saving in order to effectually obtain a saving.

Prolonging Life of Field.—The installation of costly compressing stations for natural gas from low pressure wells where the gas would not otherwise be available for pipe lines is doing much to lengthen the period that natural gas may be served, by increasing the quantity of recovery from the sands. It stands to reason, of course, that no one will operate a well when the cost of operation exceeds the return from it, but development of processes for gasoline recovery from natural gas has enabled the producer to operate low-pressure small-capacity wells that would be wholly unprofitable to maintain and operate without the additional revenue obtained from such gasoline production.

Importance of Proper Pressure.—The yard stick by which refinements of the natural gas service are measured is a comparison along reasonable lines with manufactured gas service, together with more or less of a comparison with other competitive fuels. Manufactured gas is distributed almost universally at pressures

varying approximately between two and four ounces, whereas, up to a few years ago, eight ounces was the standard generally maintained by natural gas companies. To a degree, lowering and maintaining more uniform pressures at consumer's premises will permit a better and more permanent adjustment of appliances, resulting in a saving in the use of gas, and improved service. Where the economic conditions have permitted, much has been done in this direction.

It should, of course, be remembered that the cost of manufactured gas is considerably higher, and has been at all times considerably higher than the price paid for natural gas. Due to such higher prices, the number of users of manufactured gas and the purposes for which it is used in any given locality, have been comparatively limited, and the result of this has been that the volume of gas used in cities served by a manufactured gas plant has been vastly lower than the volume used by the same city after natural gas has been served in such city. It can be safely assumed that the volume of natural gas used will be about three times the quantity of manufactured gas that the same city would use, and it can be said that there are substantial reasons for different pressures in supplying natural gas than those in supplying manufactured gas. At this time it is by no means definitely and accurately established what the relative pressures of natural gas and manufactured gas would be, especially when necessary economic conditions are considered. However, it is very generally believed now that in a natural gas service there can be some lowering of pressure below eight ounces.

The practice of the natural gas companies carrying higher pressures on their distribution mains was brought about in the early days when natural gas was introduced into the large cities using manufactured gas, and the low prices initially charged for natural gas, in comparison with the prices previously paid for manufactured gas increased the use, resulting in additional waste, and such increased use and increased waste created a demand in excess of the ability of the distributing systems to handle their loads at the same pressure carried in manufactured practices. The tendency to higher prices for natural gas has permitted a reduction in leakage in distributing systems, through the now higher maintenance appropriations, increase in capacity of new mains, and enlargement of old mains, which, together with proper installation of piping and efficient appliances by customers, are gradually permitting the carrying of pressures in natural gas service lower than the eight ounces standard so long maintained, but I may say in passing that due, as I have before indicated, to construction and economic conditions, it is exceedingly doubtful whether the pressures can be reduced to the lower pressures prevailing in some of the manufactured gas systems. A consumer can obtain efficient and satisfactory service at pressures lower than eight ounces by having his equipment and appliances adjusted and designed for use at the pressures carried. He will not have efficient or satisfactory service if the pressure of

the distribution system be either materially higher or lower than that for which his equipment is designed or adjusted. The higher the pressure, the greater the waste in operation and use, and therefore, it is conservation to distribute at lower pressures rather than high pressures.

Customer's Pipe and Appliances.—The installation of pipe on customer's premises must be adequate in size, and type of appliance efficient, to get results. Pipe installations have been greatly improved by reason of house-to-house inspections made by the companies. The best results, however, have heretofore been accomplished for the customers in those cities where ordinances exist and are enforced, prescribing the proper sizes for piping; and further benefit to the customers can be effected if cities will go further and pass ordinances prescribing the quality and kinds of appliances. But in this connection it should be noted that the natural gas industry itself must lead the way in demonstrating the benefit to the consumer of having the proper quality and kinds of appliances, for until that is done no hope can be entertained that cities will pass such ordinances, and, therefore, there should be concerted and well-defined action by the industry itself to determine the safety, quality, efficiency and kinds of appliances that should be used.

Use of Gas.—The aims of the companies generally are not to teach the consumer to use less gas, but on the contrary to use more gas; but in using it to use it in efficient ways. It seems hardly necessary to state this, as everyone knows that a business to be successful must go ahead and cannot stand still, and yet many people confuse the non-use, or limiting the use of gas as being conservation, and this is clearly erroneous. Natural gas is a wonderful boon to the people, and is intended for use, provided the use is efficient and non-wasteful. The fact that gas is so economical and convenient a fuel makes it easy for the consumer to become careless in its use.

Various persons and organizations have advocated curtailment of the use of gas for other than essentially domestic purposes, and have called such curtailment "conservation," but this seems fallacious. Thus, for illustration, the use of gas under steam boilers for hotels and office building heating is in fact an efficient utilization of the heating powers of gas, since proportionately with the quantity of gas consumed, it reaches the largest number of people, and is thus more economic than the use in the greater number of the house-heating devices in use, even where such house-heating appliances are properly designed and adjusted.

The Problem of Peaks.—It is absolutely necessary that the present peak load, which is usually six or eight times the average load, should be reduced, if service is to be maintained. This can be largely accomplished by the universal use of efficient and properly adjusted gas appliances. The elimination of these excessive domestic peaks will smooth out the load on gas transportation and distribution systems, making unnecessary

the installation of systems capable of handling six or eight times the average load, will make the capacity of the system nearer to the average load, and to that extent will eliminate the necessity of selling gas in huge quantities for other than domestic purposes in order to give proper income for the investment necessary to furnish the peak service; and besides, it should not be overlooked that any improvement in the use of house-heating equipment directly effects a saving to the consumer at the time when he finds his fuel cost most burdensome.

House Furnaces.—Much has been done in aiding customers in their selection of efficient appliances, but there is yet much work to be done in this direction. For example, an efficient gas-designed house furnace will obtain the same results on less than one-half the gas consumed in a strictly coal-designed furnace that has been clumsily converted for the use of gas, and yet in many cities only one per cent of the furnace users have gas-designed furnaces. In this connection, a dual equipment should be advocated in order that general house heating can be accomplished with other fuel when conditions and necessity demand. In this way sudden and enormous peaks resulting in poor service will be minimized if not eliminated. By dual equipment, I mean the use of two furnaces, which may be, of course, wholly separate or may be side by side, one being designed exclusively for the use of gas, and the other being designed exclusively for the use of fuel of other character. It is a fact that there has been more carelessness in the selecting of a furnace for heating residences than in the selection of all other appliances for the use of gas. It is also true that strictly coal furnaces and coal stoves, that is, furnaces and stoves originally exclusively designed for coal burning or burning other fuel, when converted for use of gas, will almost invariably have a heating efficiency of less than thirty per cent. Not much less objectionable is the so-called combination furnace, consisting of one furnace designed ostensibly for gas and the other fuels, and containing a pipe or ring burner, which when used convey a vast per cent of the heat through the flue or chimney, thus resulting in the very reverse of efficient use, and further resulting in abnormally high heating bills to the consumer.

In a resolution adopted by the National Committee on Natural Gas Conservation, which appears in a reprint copy gotten out by the Department of the Interior, Bureau of Mines of the United States, it was recommended that all heating furnaces having an efficiency of less than 75% per cent should be discarded, and there is not any question as to the wisdom of this recommendation. The carrying out of this recommendation will do away with all these converted or combination furnaces, since their efficiency is less than 30%.

Gas Ranges.—Many manufacturers are now making only properly designed, efficient gas ranges, with correct distances between the top of the burner and the top of the grid, which is of paramount importance. There

Remember this: Character is what a man is in the dark.

are still, however, some obsolete types of ranges that are being made by manufacturers, and are still being purchased by customers, who thus do not get the efficiency that should be obtained.

Many of these facts and suggestions in whole or in part have been brought to the attention of customers by gas companies, and there are still other activities along this line, of which mention may be made of the following:

(1) *Gas Appliance Adjustment*: Instruction should be given the company's own employees in the proper type of appliance for various purposes and their proper adjustment. Too much cannot be said as to the need of the proper adjustment, since it not only directly affects the consumer, but a poorly adjusted appliance often causes the consumer to condemn the service in place of the faulty appliance.

No utility that deals with the public generally can ever afford to overlook the human nature that is ever present in all of us as to any service, especially when it is measured by an invisible mechanism, such as a gas meter. If a bill for gas, in the consumer's opinion, is higher than it ought to be, no matter how or what the reason, and no matter how unsupported such opinion may be in fact nevertheless, the fact remains that very often he is not satisfied, notwithstanding the most careful demonstration of the cause, but rather suspects that the real cause is in the measuring device, which he does not and can not see, and whether poetically inclined or not he is very apt to give vociferous approval to the thought, whether expressed that way or not, that his meter is like Tennyson's Brook, "For men may come, and men may go, but I go on forever." If his pipes or appliances have leaked, or if by reason of improper adjustment he has not secured the most efficient service, if he is the average customer, he has not sufficient technical knowledge to understand or appreciate how or where the waste has occurred, or how a leak so small could have a waste so large, and especially true is this as to any appliance not efficiently used, for the appliance is burning all right, apparently to him, and that is all there is to it; and therefore, the one sure course is to get every customer advised fully so as to assure to him and that he will know that he is receiving the very maximum returns and benefit for what he pays. A dissatisfied customer is never an asset to a utility, or to any other business, for that matter. And this brings us to the very important subject of meters.

(2) *Meters*: While to the average consumer a gas meter is more or less of a mystery, as a matter of fact, as one of the large distributing companies has expressed it, a gas meter is as simple and accurate as a standard quart measure; it actually measures the volume of gas by taking it in and pouring it out. The motive power that runs it is the gas that passes through to the consumer's piping and burners. If the burner cocks are all closed, the gas meter is motionless, unless there is a leak in the consumer's piping or appliances. The consumer can readily and easily test his piping and appliances for leaks or ascertain for himself the quantity of gas that any particular appliance will consume in a given time. The

consumer should periodically close all burners and watch the meter dial. If the two-feet test hand moves, the consumer's pipes or appliances are leaking. If he desires to ascertain the quantity of gas that any particular appliance consumes, he can do it by cutting off all other appliances, allowing the one particular appliance to burn, and by watching the two-feet test hand of the meter register the quantity of gas used for a few minutes. In this way, he can keep closer watch on the quantity of gas that he is consuming.

I believe that companies can do well by issuing to consumers instructions in these matters, and many of the companies are doing so at this time.

(3) *Tests*: Testing laboratories should be maintained so as to determine the safety, utility and efficiency of all appliances on the market, and there should be co-operation with manufacturers to develop more efficient appliances.

(4) *Co-Operation with Local Appliance Dealers*: There should be co-operation with local appliance dealers where possible, to the end that they will handle only approved appliances.

(5) *Office Display of Appliances*: A display should be made in the company's office of approved appliances, with a well-informed demonstrator to explain their proper use, and if local conditions make it necessary, the company itself should go into the business of selling the proper appliances. These demonstrations may show both the proper and improper types of appliances together with correct and incorrect adjustment of same, as well as correct and incorrect use of same. Such a demonstration and display can be used at various times and for various occasions at many different parts of the city.

(6) *Newspaper and Other Advertising*: There is no better means of education than by judiciously advertising in the newspapers. There should be newspaper display advertising supplemented by advertising in booklets and pamphlets, showing the proper appliances and type of connection, and all possible benefits for the company and customer should be obtained whenever accidents occur from too small or from improperly designed gas heaters or from furnaces or other appliances without flue connection, or from rubber hose connections, to obtain the publicity that will be helpful as a caution to others.

(7) *Lectures*: The company could advocate having public lectures accompanied with moving pictures, showing the proper and improper combustion. Instructions could be given domestic science teachers in the public schools so that the children could convey the messages to their homes.

(8) *Societies*: There should be co-operation with local societies, Chambers of Commerce, improvement leagues and other organizations, and representatives of the company should visit the women's clubs, society functions, church gatherings, and these representatives should be trained in economic practices.

(9) *Official*: The United States Bureau of Mines inaugurated an extensive campaign on gas service and efficient use of gas four or five years ago, which resulted

Tomorrow: The day when idle men work and fools reform. — Nuggets

in the forming of the National Committee on Natural Gas Conservation, a committee of ten, of which Dr. Van H. Manning, Director of the United States Bureau of Mines acted as chairman, and on which were four members representing the natural gas industry, four members representing the public, and two members representing governmental and technical bodies. These men met a number of times and handled volumes of data, and finally issued a complete report on natural gas saving and efficient use, which has been adopted by practically all of the industries all over the country. Many articles have been prepared by the Bureau of Mines in illustrating and telling about this work, and these articles have been printed and distributed in great numbers. The companies would do well to secure copies of these articles for general distribution.

10. *The Bureau of Standards.* The Bureau of Standards recently conducted a series of tests and made recommendations for improvement of natural gas burners, and their work is invaluable to the public and the industry. This is only one of the many services that the Bureau has extended to the people to increase the value of their natural gas service. Pamphlets showing results of these tests, as well as recommendations should be secured and distributed.

11. *Natural Gas Association of America.* It would be amiss not to state that the Natural Gas Association of America, representing the industry in this country, has been back of and supported all of these movements in the interests of the consumer, working on the well proven theory that what is good for the consumer is good for the company, and that the Gas Association has even in the midst of a great deal of strife and turmoil followed its course of real duty along lines best indicated, in helping the consumer get the best value from his service. It is true that the Gas Association has not followed blindly a great many of the suggestions offered to it by some experts and others, refusing in this to be led off into doubtful fields, but pursued rather a course of conservatism, preferring to map out a course based only upon well attested careful and extensive reports and consideration, and the Gas Association by reason of its efficiency and caution, and careful consideration of all of these problems, has kept the confidence of the industry through it all.

12. *Individual Inspection.* I have heretofore referred to the fact that individual inspection of premises by consumers has resulted in a great deal of good. Many of the companies have made complete inspections of the premises of every consumer in many of the towns, and secured instructions and suggestions as to how the consumer could improve his service and save gas have been left with him.

13. *Public Organizations.* A great deal of good can be secured through co-operation with regulatory bodies such as Public Service Commissions and others, and their co-operation should be secured in an effort to help the consumer get the greatest value from his service.

14. *Natural Gas.* Has printed a series of articles entitled "Art of Applied Heat." The data contained in this series cost many thousands of dollars to get together, and there is no question that if these articles are followed closely they will be of great assistance along desired lines.

15. *Burning Gas.* Many of the companies have been for the past three or four years running in the newspapers, daily and weekly, advertisements showing the correct and incorrect method of burning gas. As already indicated, I am a great believer in publicity through the press, and much good can be accomplished in this line, as in all others, in convincing the consumer as to the correct method of burning natural gas.

16. *Cooking Schools.* This is essentially a day of all kinds of applied sciences, and not the least important among them is the so-called Domestic Science. It is not an uncommon thing for a newspaper to have a publicity campaign as to cooking schools, and actually have in these cooking schools gas ranges where food is cooked. Some of the newspapers regularly each year have one or two such cooking schools, lasting three or four days. A gas company can do very well by availing itself of the opportunity of co-operating with the newspapers with respect to securing the highest efficiency from the gas burners, and by securing specific instructions to the classes as to the correct method of burning gas.

Improperly Designed Appliances. All of these activities have brought excellent results, but it seems that now is the time to strike at the very inception of improperly designed and dangerous appliances, and formulate ways and means to bring about a condition that will prevent the marketability of such appliances, and every reputable appliance manufacturer stands ready and willing, as he has always done, to help bring such a condition about. This Association, the United States Bureau of Standards, America Gas Association, National Safety Council, and other similar organizations undoubtedly will co-operate with the gas industry in this matter.

It is now almost impossible to purchase an electrical appliance or anything electrical that has not been approved by the National Board of Fire Underwriters. This condition has resulted in a direct benefit to the public. Why cannot such a condition be brought about in the gas industry?

It is true that the gas appliances are subject to more variable and varying conditions in use than electrical appliances, but if this organization will put its energies and support back of the movement, as it has done in other activities, then it can be worked out.

Dealers and others handling gas appliances would prefer to sell only approved appliances, and in the interest of the public, city ordinances would soon prohibit the sale of other than approved appliances.

Conclusion.—I hope that a committee will be appointed to make investigations and recommend a course of procedure that will bring the desired results, as there is

It is better to be able to look back to a day well lived than ahead to a month of promise—The Lamp

nothing more important to the industry today than eliminating as far as possible the manufacture and use of appliances that are not only inefficient but dangerous to life and property. I know this is a subject that many of us do not like to discuss, but, as almost daily we pick up our newspapers and read of fatalities as a result of either improperly designed appliances or appliances in use for purposes for which they are not adapted, it would appear that the subject is important enough to warrant concerted action upon the part of the Association, and in doing this it is certain that the Association will be taking one further step forward in helping the consumer get the greatest value from his gas service.—
By courtesy Natural Gas Association.

AMERICAN GAS ASSOCIATION

ON and after July 1 the headquarters of the American Gas Association will be located on the eighteenth floor of the Canadian Pacific Building, 342 Madison Avenue, New York City, telephone 4209 Murray Hill.

This modern building on the southwest corner of 44th Street and Madison Avenue is within a block of the Grand Central Station and is convenient to the Pennsylvania Terminal and to all principal local transportation routes.

The Association makes the following statement in the announcement sent out:

"Our members will find the new headquarters easy of access and in the heart of New York's hotel and shopping districts, and we believe that they will offer increased facilities in every way.

"In visiting New York or passing through the city, you are invited to make your headquarters at the association offices where it will be our pleasure to serve you in every possible way."

"SEEANDBEE" NOW ON THE ROUTE

The largest and most costly passenger steamer on inland waters of the world, the great ship "Seeandbee," with her sister ship, steamer "City of Buffalo," is now operating daily between Cleveland and Buffalo.

The "Seeandbee" is 500 feet long, 98 feet 6 inches wide, has 500 staterooms and 24 parlors de luxe, providing sleeping accommodations for over 1,500 passengers. In magnificence of appointment she probably is not excelled by any vessel afloat.

Passengers may board C. & B. Line steamer at Cleveland or Buffalo any evening at 9:00 (eastern standard time), enjoy a night of refreshing sleep and arrive at destination following morning at 7:30.

A special car-by-steamer service is maintained for automobile tourists, and it is evident from the ever increasing number of motorists who place their cars aboard C. & B. Line steamers that this service is immensely popular.

All railroad tickets reading between Cleveland and Buffalo (in either direction) are good for transportation on these steamers.

IMPROVED WARNING SIGN

J. H. Schalek, Pittsburgh, Pa.

An "open-day-and-night" danger signal. The sign or signal consists essentially of a half or three-quarters inch rod, four or five feet long, pointed at one end and pipe-threaded at the other end. To the bottom of a regulation lantern is soldered or otherwise fastened a collar that will fit the threaded end of the rod. If the collar is cut in half, the lantern will stand on a flat surface as well as the unprepared lantern, as the bottoms are usually concave. The sign (Danger) is painted upon a 16 or 18 gauge sheet iron plate, 4 inches wide



IMPROVED WARNING SIGN.

and 12 inches long, and riveted to the rod. A very good feature of this warning is that it may be seen from a great distance as when placed in the position recommended by this wrinkle the daylight sign will not obstruct its visibility. It may be filled while on "the job," and, by a one-armed man if necessary. It is not dislodged by the wind or an accidental bump as is the case with the hook method. The signs and lanterns may be carried as a unit—something that the man who does the carrying will appreciate. It may be constructed in the shop and without the aid of a blacksmith. The lantern cannot be broken by bumping against the rod during windstorms as is often the case when the older method is employed.

This form will meet the needs of one-armed army men if employed on street forces.

Very few, if any, persistent advertisers have failed to attain results

Regarding Standardization

Features of Standardization in the Natural Gas Industry

By H. C. COOPER

Chief Engineer West Natural Gas and Affiliated Companies, Pittsburgh

THE Board of Directors of the Natural Gas Association of America have had this paper written, believing that now is the proper time to bring before you for consideration the important question of establishing standards for certain

matters of operation and construction commonly met with by all companies engaged in the business of producing and marketing natural gas.

It must be clearly understood that standards are simply the expression in words of what the united experience and judgment of those engaged in the industry have found to be the best method of performing any particular operation, or the most satisfactory plan of constructing any particular part of a natural gas plant.

Standards are only applied to a few, and those the most important features of any business.

No one is obliged to follow standards, but when a recognized national institution, such as the Natural Gas Association of America, has given its approval to a standard method of doing some operation in connection with the natural gas business, and thereby has standardized this method, it is apparent that a benefit is derived from following such recommendations. Standards are not proposed or established which will interfere with the proper conduct of business affairs.

The natural gas business has now been in existence for nearly half a century and none of its particular methods of operation, or elements of construction,

have been standardized. Much careful study has been given to all of these matters by each gas company and by many individuals, and the business has prospered. But during the past few years a change has been taking place in the character of the whole industry. With the falling supply, the use of gas for fuel has diminished, and from a business dealing in low priced gas handled in large volume, we are changing to a business dealing in small quantities of high priced gas; therefore, conservation matters not vital in past years, have now to be considered, and we are finding that matters concerning the measurement of gas, the efficiency in pipe line systems, prevention of leakage, and economy in labor and fuel in field operations have an important effect on the earnings of our business.

We are all aware of what has been done to bring order out of confusion in the field of manufacture by the establishment of standards, such as those governing the quality of material used in construction, the methods of testing materials, the construction of boilers, elevators, and many forms of apparatus; and most important of all, the forming of safety standards. This work has been done almost entirely by the voluntary efforts of industrial associations similar to the Natural Gas Association, and by scientific societies and government bureaus and therefore the standards so established have such reliability and authority that adherence to them is of much benefit to all the industries affected. And, further, when for the benefit of the public, it has been found necessary to enact any laws, such as matters concerning safety, or proper quality of products, these standards have been used as a basis for such laws.

Although the natural gas business differs in many basic particulars from the manufacturing industry just alluded to, the principle of establishing standard practices, standards for efficiency, and standards for apparatus, has its field of application, and similar benefits due to proper standards may be expected.

Consider, for example, a few specific matters of fundamental importance which might be considered for purposes of standardization.

1. We buy and sell natural gas by volume, yet we have no standard with which to describe the cubic foot, which is the basis of all measurements. In every contract for the purchase or sale of gas, the parties



H. C. COOPER

Act on this: It is cheaper to keep well than to get well.

to such a contract fix the pressure and temperature governing in each case. When, therefore, gas is purchased under one set of conditions, and sold possibly under quite a different set of conditions, time and expense are required to make constant computations and adjustments. As the time approaches when gas manufactured from coal or oil is to be mixed with our natural gas, these matters of computation will become more complex. Conditions of saturation must be taken into account, and on account of the increasing value of the gas, the importance of exactness in the description of the cubic foot, becomes more important than in times past. If it were possible for this matter to be standardized so that all references to the cubic foot would have a definite meaning in the trade, it is believed considerable benefit would be obtained.

2. Consider the matter of heat value of gas. We speak of the b. t. u. value, but we have no standard form of expression to say whether we are referring to the gross heat value of the gas or the net value. This is important and may lead to confusion when natural gas is mixed with manufactured gas. It is unimportant in contracts dealing with natural gas only, but this matter should be standardized for mixed gases.

3. It is important that a standardized method of determining the specific gravity of gas should be established. Some variations at present exist in determinations made by different methods, and as this matter is of prime importance in correct measurements of gas, the matter should be established on a standard basis.

4. All the operations pertaining to the measurement of gases are in need of complete standardization. A code should be established covering these matters and a complete and permanent installation covering parent orifices, should be maintained with which all forms of meters could be compared for correctness. The importance of this matter is apparent to all and should be made the subject of very exhaustive and careful study.

5. A standard method of testing natural gas for gasoline content is much needed. The value of gas may, in some instances, become affected by its gasoline content, and because of the fact that the quantity of gasoline obtained from gas varies with the method of extraction employed, and varies with the quality of the gasoline which it is proposed to extract, there is at present no clear understanding of what the term "gasoline content" really means in a commercial sense. By establishing some method of testing, and some standard quality for the product, this condition of uncertainty could be eliminated, and a standard for reference established.

6. Many of the questions concerning the quality of mixed gases have to be determined by analysis, and it appears advisable that a standard method of making such determinations by analysis should be agreed upon.

7. The Natural Gas Association should codify and fix standards which it could approve for the efficiency of cooking stoves, hot water heaters and lighting fixtures. The work which has been done by the government bureaus, and by individuals working in different laboratories, would be of assistance in the formation of such a code.

8. To assist in the prevention of loss of natural gas through the leakage of pipe lines, the Natural Gas Association could, it is believed, establish standards of efficiency which could reasonably be maintained for pipe lines of different sizes and of different construction. To do this it would be necessary to establish a standard method for testing pipe lines, so that if at any time it should be required to determine the leakage of a given pipe line, the manner of making this determination would be conducted in accordance with the standardized method. Questions concerning pipe lines are frequently brought up in connection with conservation matters, and at present there exists no well defined conception of what quantity of gas a line of any given size and length will lose per day, when working under a given set of conditions. It would require considerable study to determine this question, but it should be determined, so that gas companies may know what reasonable efficiency their pipe line systems should have.

9. A standard should be established for the quality of the material used in making the joints of pipe couplings other than screw joints. The thought here is that all rubber used for this purpose should have certain resisting qualities against the attack of gasoline. This has to do with the general purpose of conservation.

10. A code covering the materials used in pipe line construction should be formed in which standards should be set up for matters such as the following: Quality of gasket material to be used in flanges and under saddles, having in mind the various different conditions covering the use of such materials. The proper weight of fittings and valves for lines of different sizes and working under various pressures. This code should include standards for the gas connections at compressor stations, the location of safety gates with reference to buildings, the proper arrangement of gate valves at compressors, and the size and position of safety valves on such compressors. A standard plan for connections and drips at wells should be established, having in mind the best method of protecting a well, and at the same time allowing for convenience in operating the well without wasting gas. There are many other matters which might be suggested as coming properly in such a code, but will not be discussed at this time.

11. For the purpose of reducing expenses in the apparatus necessary for drilling operations and pipe line construction, standards should be agreed upon covering matters which affect the interchangeability of apparatus made by different manufacturers.

It's the ability a man uses, not the ability he possesses, that regulates his reward

overgoing specific matters have been mentioned to show how the matter of standardization applied to the natural gas business, and to draw on to the wide scope and effect of such standardization. The single purpose of establishing standards to assist in simplifying practical operations, to be eliminating misunderstanding in doing business, to aid in reducing waste, and to operate to economy. A code of standards such as we have sketched does not in any sense become an ending hapdstock. There are only a very few matters which are of that order of importance in business which merit standardization, but when a matter has this importance, it should be standardized. This undertaking cannot be accomplished in a time. The general committee charged must carry careful study to determine which specific matters connected with the industry should be standardized.

After this has been accomplished, the actual making of what each of these standards should be, is the work of a special body of men delegated for that purpose, and in many instances the work of these special bodies will consume a great deal of time and entail much cost. It is needless to say, however, that the benefit to society is great in proportion to the efforts and time expended in this work.

Standards now existing in the oil and gas industries of the country have been established through the voluntary efforts of associations of men of importance. Several years ago, however, it was found that these independent efforts were leading to some confusion in the establishment of standards. For that reason, these associations were joined with a number of technical societies and government bureaus, and formed what is now known as the American Engineering Standards Committee. This committee has a permanent office in New York City, and a membership of 47 men. These men are engineers and represent six engineering societies, 13 industrial associations, and five government bureau attachments. When any of the associations thus joined deem it advisable to establish a standard in a matter pertaining to the industry with which they are connected, the matter is taken up with this main committee. The main committee does not itself establish a standard, but it forms a subcommittee by appointing delegates from other associations and government bureaus which would be affected by the making of such a standard, and this subcommittee does the work of actually forming the standard. The main committee sees to it that in the establishment of the standard, there has been brought together a proper body of men for the purpose, and that all those affected have been properly notified. In other words, the main committee acts as a clearing house for these matters, and when the standard has been finally established and approved, it represents what the word standard means, and is therefore accepted by all the industries.

The Natural Gas Association of America is not a member of the American Engineering Standards Com-

mittee, but if it were desired to undertake the establishment of standards applied to the natural gas business, such, for example, as some of the matters we have mentioned, it would be found much help and assistance could be obtained in this work, and a very much broader scope given to it, by the assistance of the various government bureaus and industrial associations.

This paper has not mentioned a number of very important matters connected with the natural gas business which it has been suggested might well be standardized, such as matters concerning standard forms of leases and agreements, and matters concerning electrolysis measurements, and in fact a great many matters of first importance, but it is not our purpose to go into so much detail, believing that the matter of prime importance is to bring clearly before the convention in a broad way, the necessity of standardization in the natural gas industry at this time because of the great assistance it will render in the future in conducting the business. By Courtesy of the Natural Gas Association.

FURNACE FOR MELTING SOFT METALS

To meet the demand for a low-cost, medium size gas furnace for melting soft metals, the Johnson Gas Appliance Company, Cedar Rapids, Iowa, announces its No. 300 furnace, here illustrated. This furnace stands 28 inches high, weighs 100 pounds and has a reasonable cast iron melting pot holding 150 pounds of metal.

Its three Johnson Patented Atmospheric Bunsen Burners are stated to develop any desired temperature up to 2250 degrees Fahrenheit, and to consume only about 40 cubic feet of gas per hour. Burners have shut off valves and pilot lights. Two burners are sufficient for keeping the metal molten.



The high efficiency claimed for this melting furnace is ascribed to the Johnson three jet regulators in its Bunsen burners.

This regulator, with its jets that can be instantly adjusted to any pressure or quality of gas, sends a sharp, solid jet of gas with great force up the center of the mixing tube at main pressure without the use of forced air blast or blower, producing the highest possible flame temperature.

He who takes good care of the present, need never worry about the future

Transition in an Industry

*Good Business Sense and Farsightedness Enable Appliance House to Continue Business
and then Necessitate Factory Expansion*

SOME years ago, the "hot-plate," then the "cooker," and a portable oven for use on the ovenless devices, comprised the bulk of the sales made of gas-cooking appliances. Later the "square" or "box range" came into existence as a commercial proposition. Then, back in 1905 or thereabouts, we saw the first cabinet-gas-range placed on general exhibition, not the first cabinet range made, but the first cabinet range offered in a general way to the trade.

At the first exhibition held by the National Commercial Gas Association in the Knickerbocker Building, corner Fifth Avenue and 20th Street in New York, that which to many was then rather a strange and indeed a new appearing cooking device was displayed. It was very similar in contour to the cabinet range of today, and if we remember correctly, it was displayed by Rathbone, Sard & Company, their booth being conducted by their Mr. Brown who has since passed away, his later years being spent in California.

Two things made an impression upon those who had to do with the management of that exhibit; we do not mean the only two things, but nevertheless two things, namely, the presenting of this cabinet range and the earnest and untiring attention that Mr. Brown gave early in the morning to his exhibit, later to the gas-men who were quick to spot the range and desired to look it over, and still later to the crowds of New York people who visited the exhibition. This was the show that preceded the great exhibition of the N. C. G. A. in Madison Square Garden.

Gradual has been the growth and development from the hot-plate to the wonderful products of the gas-range factory of today, in design, spot-welding, class of sheet-metal used, styles of gas-cocks found on certain makes, the self-lighter, the oven heat control, the finish, etc.

In 1922 the gas-range is, indeed, a marvel of beauty, compactness, efficiency, etc., but, as we have said, the transition period has extended over a number of years. However in the field of gas-arc lamps, matters have in changed almost in a flash, as rapidly as have developed the wireless telegraphy and wireless telephony.

At Madison Square Garden exhibition of the N. C. G. A., the General Gas Light Company supplied vast chandeliers, magnificent in design, all especially made for the occasion, and by use of their arcs on these chan-

deliers the main gas-arc-light illumination. Then, later, at the Atlanta (Ga.) show of the N. C. G. A., the same company supplied illumination by their arc-lamp method, and supplied other lighting effects as well, lamps mounted on beautiful columns or standards, inverted glass bowls, while at other shows still later, the gas-arc lamp also played a prominent part.

During a recent visit to the plant of the General Gas Light Company of Kalamazoo, we, however, saw but a few large cases filled with gas arc-lamp parts required in the assembling process to provide here and there a customer with lamps or parts as might be required.

We did not see rows of workmen at benches, and at lines of tools turning out finished lamps and parts of arc lamps, although it was not so very long ago when upon another visit to those same works, many men and girls and many machines and tools were seen employed in the sole manufacture of that illuminating product.

In our ramble through the works just recently, we looked into a room very ample in size and containing many shelves; upon these rested relics of the past in the form of dies and tools which, in their producing had cost many, many thousand dollars. These have not yet been consigned to the scrap-heap, although the demand for the product made with these has diminished.

To see a business thus practically wiped out, and vast investments in special equipment and tools buried forever, would have discouraged almost to the point of suicide some men of even balance and good sound sense, though Mr. A. H. Humphrey, President of the General Gas Light Company sailed through seas rapidly roughening with the storms of changing conditions, constantly on the lookout for a harbor where he might make a safe landing. Such landing was made when the "Radiantfire" was finally brought upon the market, this most excellent device opening to the General Gas Light Company a promising future. It was the rainbow of promise, yet much still remained to be done ere production could be accomplished.

The manufacture of "Radiantfires" began in the old building of the concern, in which millions of arc lamps had been constructed, and out of which these had gone to make the ways-of-the-night light, to help in the prevention of crime by brightening the way, to assist in lighting manufacturing plants where thousands of necessities are made, and to lend themselves to a then ever increasing, and a still existing need of gas-illumination for commercial purposes.

Execute this: There is no such thing as a "little thing" in business.

business of producing "Radiantfires" increased as the sales of these clever heaters rolled up thousands. So it came about that the General Electric Company required a very large addition to its plant, more than doubling the building—whereby to provide area in which a great deal of new tools, many of them automatics, might be used in order to reduce the cost of production, make it possible to meet the wonderful growing for "Radiantfires."

ing through the works, our guide, one of the Mr. A. H. Humphrey, all are actively connected with the business, pointed out where the old ended and the new began, the new, as we have been made necessary by the remarkable for this particular heater product, which was the institution to rise, as it were, much like a phoenix from the ashes of the lesser demand for "Humphrey Arcs."

under of immense die presses and dies, running at many thousands of dollars, the automatic drill presses, likewise running into thousands of dollars, a building equipment and room that would surprise one not prepared to see a large and complete outfit, broke upon our eyes as we passed through the machinery and other departments into the finishing department.

are reminded of the words, "The King is dead, long live the King" for on the one side were gas arcs and tools that had cost vast sums of money, then now dead, while on the other side a great many more than half of it brand new, with new tools the like of which could not elsewhere be made of other enormous especially equipped factories in extensive lines of manufacture.

the "Humphrey Arc" to the "Radiantfire" was a mere step, simply a rearranging of material in the plant requiring but a brief period, and then out a completed product in large quantities, the conditions have indeed been most trying, the demand for arc lamps on the one hand, and an unknown heater and a new enterprise on the other. Who would not have shuddered in the task of swinging from the one line to the other in the time required for a pendulum to swing to and fro?

Humphrey and his sons, and W. F. Woadley, went through periods of untold perplexity, days of planning, and days and nights devoted to the building of this model factory filled with its finest machinery having to be of special design. Then came the building and carrying out of sales methods and so that should return the funds necessary to the carrying out of such a mammoth undertaking.

industries in the field have, like the General Electric Company, found it necessary to rearrange shops, to scrap patterns, jigs, templates, etc., to meet new demands, relinquishing old lines, general "shifting about" with an ever-changing

trend of affairs, it is seldom that so absolute a relinquishing of old lines and the finding of new, and the adjusting of oneself to absolutely new lines comes upon the horizon, therefore we have particularly cited this institution, although the gas interests of the country should never forget that all of the appliance manufacturing concerns every year without entailing one cent of cost upon the gas-men, scrap thousands and thousands of dollars of equipment and material, and spend equally vast sums in the bringing out of new equipment which, if the gas man will be broad-minded, he must recognize as directly in his behalf, even though the manufacturer's purpose may be in his own behalf.

Furthermore, the gas man should always keep in mind that if it were not for the spending of thousands upon thousands of dollars in experimental work, in readjusting appliances in bringing out of new appliances, and in adding useful devices to old line designs by the manufacturers of appliances, competing industries would promptly walk away with the gas man's business. In other words, while methods of gas manufacture change, gas itself as viewed by the public is exactly the same as for years past, even though the gas man may change and be allowed to do so from candle power to B. t. u. basis, etc.

So far as the public is concerned, and the public is the market, it is really not gas that sells gas, but it is the appliance that sells the gas. In other words, what the public sees is the appliance, the product of the appliance manufacturer. It is this that tempts the public to use gas. It is this that induces the public to continue using gas; it is only, in part, gas itself that holds the trade.

To judge as to whether the foregoing is true or false, just allow the gas-appliances offered to the public today to be of the design, workmanship, and finish of the appliances that were offered to the public some years ago, even though the gas be the gas of today, and we know how quick would be the turning of the back of the public on gas, and would be the public's accepting of competing methods of cooking, heating, water heating, and the performing of other service that today is held for the gas interests through the exceedingly well designed, efficient, cleverly appointed and elegantly finished gas appliances as seen in this year A. D. 1922.

It has often been said that the gas companies should spend much time in the selecting of men who would properly represent them when coming in touch with the public. The same applies in the matter of the selecting of gas appliances. Only those should be selected that will best represent the interests of gas, and in view of the immense importance of this branch of the business, the gas appliance manufacturer should be given every possible consideration on the part of the gas man, and every encouragement on the world to produce the very best in design, efficiency, workmanship and finish that money can buy, and then the gas man should be willing to pay the gas-appliance manufacturer accordingly.

If you have any hope of a managerial position, first learn to boss emotion—Kaufman

Many a chandelier, fixture, and portable manufacturer has brought out exceedingly attractive lines for gas use, while the gas-companies have been the ones to kill the goose that for years laid the golden eggs, and that would still continue to lay golden eggs for the industry, if the goose had not largely been, and is not yet being strangled by the greater "goose," viz., not a few of the gas-men of today.

Let us recount actual composite happenings as follows: A gas appliance manufacturer producing beautiful chandeliers, beautiful portables and beautiful side brackets for gas use shows them to a gas manager, who says, after examining them, "They are very beautiful and very attractive; but how much will you sell this plain cheap fixture for?" A thing that in the open market might sell for \$1.00 or \$1.50, forgetting that it is not gas that sells gas, but that it is the appliance, its beauty, its attractiveness, its convenience, its finish, and, in a word, its acceptability, that sells the gas.

Indeed, it has been lamentable, this forgetting on the part of the gas-man, that it is not *his product that sells his product*, but that it is the appliance that sells it, for having forgotten this absolute essential, the gas-man has resorted to all sorts of means and methods to beat the appliance manufacturer down in price, when he must have known that to do so meant to curtail the funds available in the gas appliance manufacturer's treasury, thereby making it compulsory that he should skimp on the product instead of making it so attractive that one could not resist a purchase, which like the buying of

the phonograph ensures the continued purchasing of the necessary product, without which the appliance purchase would be useless.

The gas-man should always keep in mind the fact, because it is a fact, that it is not gas that sells his gas, but that it is the attractiveness, and the real utility of the appliance that turns the scale in the purchaser's mind. It's strange; isn't it, that the all-important gas-appliance manufacturer until the National Commercial Gas Association gave him the opportunity to assert himself, was by the gas-manager who absolutely needed the appliance manufacturer, called a "camp-follower" or "a peddler," while instead he should have called him a "fellow" of the industry.

There were back in 1905, and there have been since, glorious examples among the gas-men, of breadth of vision and of appreciation of the value to the industry of the gas-appliance manufacturer; yes, there have been not a few of such, but it is of those of narrow vision, and there have been many such, that we speak. The vision of the gas-man has been diverging rather than converging, as was the tendency a few years back. This diverging process, in other words, the appreciating of the appliance-manufacturer, will grow just as fast as the gas-man grows into a realization of the fact that it is largely not the gas that sells the gas, but it is to a very large degree the appliance that sells the gas, even though the gas itself may be a thing of wonderful convenience. The public is most impressed with what it sees, and gas it cannot see.

Sales Co-operation

By WILLIAM RIVERS BELL,
Sales Manager, Haverhill (Mass.) Gas Light Co.

THE problem of selling more gas is one of very vital interest to the gas companies today and of especial interest to the Sales Departments, because that is their particular job. What are we as Sales Departments doing to solve this problem? Are we keeping the gas sendout up or is it slipping back day by day from the recent high mark?

During the period following the close of the war there was a very large demand for gas and the increased sale resulted in many of the sales departments taking the attitude that the gas idea had been thoroughly sold and consequently they could sit back and take it easy.

However, with the advent of the depression the error of this attitude was shown and the realization came that if the send out was to be kept up, some very drastic action must be taken.

The large industrial load that most gas companies obtained, often without any effort on their part, suddenly decreased to a small percentage of its former volume and the truth was forced upon us that the use of gas in the home is of vital interest to us if we are to minimize the effect of industrial depression.

In attacking the problem of the sale of gas in the home, we should analyze the methods of the past to see wherein they can be improved.

During the period of the war and the inflation at its close the personnel of the sales departments was sadly neglected, with the result that most departments were forced to build up a completely new organization. This requires much time and effort and should receive the proper attention so that the department can be brought to a high standard of efficiency and ability.

For many years the gas companies have felt that the sale of gas appliances rightly belonged to them and that any dealer in such appliances should be frowned upon and discouraged. The practice of price cutting was resorted to so that this competition was stifled.

Competition automatically weeds out the incompetents and rewards the hustlers

Naturally with such conditions the dealers either ceased to sell gas appliances altogether, and devoted their efforts to the sale of appliances using competitive fuel, or they sold a cheaper, less efficient line of gas appliance, with resultant troubles for the Gas Company and corresponding loss of gas business.

It is a universally accepted principle that the larger the number of dealers in any city who are pushing and advertising an article, the larger the sale of that article. Does this not apply to the sale of gas, too? If our increase in sendout depends upon the increased sale of appliances, why should we not attempt to have a large number of live dealers in our city helping us push these appliances?

In attempting to work out a plan of co-operation with the local dealers, we have given attention first to the plumbers, because we felt that they are the logical gas appliance dealers and that special effort should be given at this time to the application of gas to water heating. The plumbers are especially interested in the sale of water heating appliances and their opportunities of interesting their customers in heating water by gas are very great. We feel that much effort should be given to this field during the next few years.

Small difficulty was encountered in getting the local plumbers to accept our plan of co-operation and the results to date have been very gratifying.

This plan includes the following features:

All tank water heaters sold by us are installed by a plumber at a flat charge for each installation. The customer is billed for the heater, including the installation and allowed terms on the entire amount of the charge, and the plumber is paid by us for the installation immediately. The purchaser of the heater has the choice of a plumber, but if no choice is made, the order is given to the plumbers in rotation.

The plumbers purchase all tank heaters that they sell from us, installing them at the standard price and paying us for them within thirty days. These heaters are sold to them at a discount. They also carry at least one heater for display and get the heaters from us as they sell them.

All automatic water heaters sold by the gas company direct to the customer are delivered and installed with gas connections only. In the majority of installations, the gas connections are included in the sale price. The water connections to these heaters are made by a plumber and ordinarily the customer pays the plumber direct. In cases where the customer desires to deal entirely with us, we will have the water connections made by a plumber and will pay the plumber within thirty days, charging the customer for this installation along with the charge for the heaters. If the heater is purchased on term payments, the connection charges are carried by us in the same way.

All automatic water heaters sold by the plumbers are purchased from us. We deliver the heater to the consumer and make the same gas connections as for heaters

sold direct by us. There is no charge for this connection to the plumber. We allow the plumber a liberal discount and an additional discount for cash within thirty days. If the customer desires to purchase the heater on our installment plan, we will carry the account in the customer's name and allow the plumber the discount referred to above.

Discounts are also allowed to the plumbers on ranges, room heaters, industrial appliances, lights and lighting material, and miscellaneous appliances and material. This permits them to sell this material at a profit and also relieves them of all expense and trouble of carrying a stock of these appliances.

Investigation of other stores in the city selling gas appliances disclosed the fact that the larger department and furniture stores were agents for standard ranges, as well as for the cheaper lines.

It is our desire to have standard equipment only sold in this city and to have the less efficient kind eliminated entirely. If a dealer will push a standard line to the exclusion of the other, we prefer that he handle his own agency and not require us to finance his stock.

In most cases we found after a conference with the dealers and a promise to co-operate with them in every way possible, that they were perfectly willing to eliminate all but standard gas equipment and to put more effort into the sale of these appliances than in the past.

In most instances, the large department stores were not interested in our proposition to carry stock for them or to assist them in financing the sales. However, some of the smaller dealers accepted this plan and show our ranges on their display floor, and the ranges which they sell are delivered by them to the purchaser direct from our store room. These ranges are sold at a discount to these dealers with an additional discount for cash within thirty days. The ranges shown on the dealers' display floor are either purchased outright by the dealer or are carried by him on consignment.

In addition to these plans of co-operation, we also sell lights and lighting material at a discount to small stores, drug stores and grocery stores, especially in the outlying districts. The discount is large enough to permit these dealers to sell this material at a small profit and we find that they are glad to carry it because of the good-will it brings them in addition to a small profit. These articles are resold by these dealers at the same price that they can be purchased from us by the customer.

We feel that the results obtained from these plans have proven the success of the idea and that benefits have been derived both by the gas company and the dealers. Not only have the dealers increased their sales of gas appliances, but the gas appliances they sell are standard. The number sold by the gas company has materially increased, also thus disproving the idea that decreased sales for the company would result.

We have had very little trouble in lining up these co-operative plans and getting them to work smoothly, and they are now past the experimental stage and the future results seem very promising.

Distribution can be made less expensive by the proper use of advertising

Tell the Story

Telling the Public the Story is a Great Means to a Better Understanding

By G. C. MAXWELL
of the Ohio Committee on Public Utility Information, Cleveland

BEFORE audiences of representative men and women in more than one hundred Ohio communities it has been my privilege to tell the story of the utilities.

If any came to scoff, they remained to pray.



G. C. MAXWELL

If any came resigned, as they thought, to being bored for a half hour or longer by a tiresome recital of statistics and dry, uninteresting technical and legal lore, they met with surprises.

If any came with deep-rooted prejudice, inherited or acquired, they left thinking and wondering.

People in Ohio are beginning to realize that there is romance in the story of utilities. Replete as American history is with marvelous achievements, there is none more marvelous or containing more elements of actual human interest than the story of the origin, growth and development of America's utilities.

A little over a year ago, with some misgivings at the outset, perhaps, the Ohio Committee on Public Utility Information arranged to supplement its newspaper publicity work by the establishment of a Speakers' Bureau and the conduct of an intensive speaking campaign before organizations of every nature throughout the state.

There were misgivings because such a campaign on a wholesale scale was a thing entirely new. There were misgivings because theretofore the utilities had never taken their own part nor pleaded their own cause to any appreciable extent. There were misgivings as to how the general public might view attempts to bring before it the utility story. There were misgivings as to

the attitude which newspapers in the state might take toward such programs, but after a year's trial in Ohio, all these doubts have been swept away and it is our emphatic judgment that the public generally is not only a willing listener but is anxious that public utilities shall state their case.

It will probably impress you gentlemen as being a remarkable thing that in connection with all the audiences addressed in Ohio, there has not been a single rebuff or discourtesy shown, neither has there been adverse comment upon the part of any newspaper.

It should be borne in mind that the scope of an address relative to public utilities is not limited to the membership of the particular organization addressed. While it is a very fine thing to drive home directly to a group of business men comprising a civic organization of some sort, facts concerning your industry, those addressed directly really constitute but a small part of the total audience, for in every community, local newspapers, being particularly anxious to cover local happenings, have carried from one to five columns of the text of the addresses, thus getting the message to practically every home in the community.

That which is being done in Ohio can and should be done elsewhere. It is necessary that utility men themselves talk about their own business. One difficulty that we always have, whatever our business or profession may be, is that our particular work becomes so familiar to ourselves through more or less routine handling over a period of years, that we fail to realize that what to us is commonplace and routine, may have about it points of intense interest to those around us who know nothing of the intimate details of our business.

A story told of Rufus Choate, perhaps the foremost American lawyer of his generation, illustrates the point I have in mind. Choate was retained in a case involving some technical process of which he knew nothing. The superintendent of the factory wished to tell Choate something of the plant but hardly dared speak to one who, in his opinion, knew everything. At last he feebly hinted somewhat in this line: "Mr. Choate, I suppose you know all about our system of manufacturing goods!" "Of course," replied the sly Choate, "but suppose there is some ignoramus on the jury who never heard of your mill. How would you explain it to him?" The superintendent, fancying himself explaining to one who knew nothing of it the intimate details of what had been his life work, forgot all his awe of the great Choate, and

A lot of us still keep our brains in captivity

in his enthusiasm over a subject with which he was entirely familiar, talked so well that he surprised himself. Steady as he had been for years, however, he took a day off to hear Choate argue the case and his admiration knew no bounds. "Choate is a wonder," he said. "I knew that he had read all the law books in the world and that he could talk Latin all day long, but what takes my breath is he knows our system better than I do, and I've been with the concern thirty years." Never to the day of his death did it occur to him that it was he himself who had been Choate's instructor and that Choate's great argument was really the superintendent's own story.

So let me ask you not to hesitate to talk shop and don't get into the habit of thinking that because a thing in connection with your business is very obvious to yourself that it must be the same to others in your community.

Public relations is becoming more and more a dominant theme at every gathering of men in the public utility industry. Great work has been done by the State Committee on Public Utility Information, and we feel that our work in Ohio indicates conclusively that the general publicity work of such committees can be advantageously supplemented by means of public addresses.

Unfortunately, not all men in the public utility business have as yet seen the dawn of a new day in the matter of public relations. In Ohio we still have some laggards and, I presume, the same condition exists in other states to a greater or lesser degree. Even in the natural gas industry we occasionally find men who have not yet caught the vision of public relations in a statewide aspect. Among these is the utility man who is enjoying a peaceful and tranquil existence in his community, who has no troubles with his public, who has a satisfactory rate contract several years yet to run. His narrowed view fails to sense the interdependence of all utilities in the matter of public relations. He fails to realize, for example, that the utility operator in a southern county of a state for whom all is clear sailing, has, nevertheless, a very definite interest in the feeling toward public utilities in a northern county several hundred miles away. He will realize it, however, when for example, the people of the northern county, through lack of understanding of public utility problems, elect to the legislature representatives who, through lack of understanding, introduce and work for legislation of the inimical sort harmful to utilities and public alike. We have had many examples in Ohio of instances where hostility toward public utilities in a single county has very nearly resulted disastrously to the utilities of the state as a whole.

Whether the power of regulation be exercised through a state commission or through local regulatory bodies or officials, your regulation primarily rests with the people themselves. To the extent, then, that the public has knowledge of the fundamental facts and conditions

underlying your industry, to that extent will the public's regulation of your business be just and fair.

It is our constant objective to bring these fundamental facts to the knowledge of the people served. We are pointing out the difference between the business of a public utility and the business of the merchant or manufacturer in the matter of capital turnover and in other respects. We are laying especial stress on the constant necessity for the investment of new capital if utilities are to properly expand to keep pace with the needs of the community; how those with money to invest will not purchase the securities of public utility companies unless they be assured of at least as good a rate of return as may be secured from investment in industrial or governmental securities. We are urging the customer ownership idea, thereby taking the customer in as a partner in the business, replacing the former demand for municipal or governmental ownership, which in most instances is really political ownership and control, with the real public ownership of utilities through investment in them upon the part of the people served.

Ohio stands in a peculiar situation with respect to the natural gas industry. Once endowed with a seemingly exhaustless supply of this wonderful fuel, men in the industry have seen this supply gradually reduced and have for several years past, been sounding the tocsin bell warning the people of the inevitable exhaustion of supply unless proper measures to eliminate waste are established and adhered to.

Next door to us we have seen the exhaustion of the once famous Indiana fields. Some of our own enormously producing fields of bygone days have become but a memory. More and more are men in the industry compelled to seek out new sources of supply.

Much has been accomplished in the education of consumers in effective conservation methods. There is danger, however, that in your very zeal in the cause of conservation, injustice may unwittingly be done. True conservation of natural gas does not imply denial of its use. It is not proper that any of your patrons should receive that impression as a result of your conservation program. A Divine Creator never intended that great storehouses of natural resources should be locked against mankind's use through false conceptions of true conservation. Out of these storehouses man may use freely, but he must use wisely and well.

This, to my mind, should be the objective of the true conservation program. By development of real salesmanship methods, by liberal advertising, by public addresses teach the great value of natural gas; urge that it is man's privilege to use of it and to use freely, but at all times to use wisely, to use efficiently, to use economically, and to use without waste.

We are trying to inform the people as to the gross unfairness of our system of public utility taxation in Ohio. Years ago the utilities permitted themselves to be made tax collectors, collecting taxes indirectly from

the people which taxing officials would not dare levy directly. The burden in our state, and I presume the same applies in other states as well, is becoming greater all the time. We are very effectively driving home to the people the fact that a public utility has no source of income except that which it collects from its customers as charges for services, and therefore it is necessarily the public itself which must pay these taxes.

Occasionally a radical will protest against the public relations movement and attempt to question the propriety of bringing to the attention of the newspaper publisher matters in connection with your industry, such critics expressing the view that the reporter himself should find his own news rather than have it made to order for him. I think this criticism has been ably answered by Mr. Atherton Brownell in a recent article in the "North American Review," in the course of which Mr. Brownell makes this statement:

"We may not necessarily go as far as to agree entirely with the newspaper cynic who defined 'news' as 'any violation of any one of the Ten Commandments,' but it is indisputable that in common practice that which is compelling news, that which bears the editorial blue penciled 'must' across its face, is of some sensational happening, something picturesque and attention-arresting, something that can be made into a 'story' and the more 'human interest' it possesses, the better. Bad news flies fast—it meets the reporter more than halfway. Good news is often retiring and conceals itself. The function of the real publicity man is to give it wings. The news prepared by the modern publicity man is the news of construction. It has been sought out from a mass of data or other information in which it is so deeply embedded that it could never be found by the hurried reporter seeking the news that shrieks aloud to be told."

Even though we have attempted a great deal during a single year in Ohio, we realize that the work is just beginning and the surface has only been scratched. Thousands of women's clubs are meeting every week in our state, and to them, as rapidly as possible, will be taken the story of your business. Our high schools will afford a fertile field for the public speaking work, as will also our churches.

In conclusion, I know of no better suggestion to leave with you than that of stimulating within yourselves and those in your employ, a greater pride in your own business, if such a thing is possible. Your industry has meant much in the development of America industrially, it has meant much in adding to the comfort and convenience, if not the actual possibility of existence, in millions of American homes. Great credit is due you gentlemen for the fact that you have unselfishly urged at all times the conservation of your product that future generations may reap some benefit from a gift which nature has bestowed. The efficient handling you have given the problems of your industry in the past demonstrates your ability to care for the great needs of the future, and when the day comes,

as inevitably it must, when in some communities there will no longer be this product of nature available for mankind's use, I am quite sure that the situation then arising will be ably handled by the men who have unselfishly extended the usefulness of natural gas for at least another generation.—*By courtesy of the Natural Gas Association.*

"OILWELL" CHANGES

Mr. Louis C. Sands, Vice-President and General Manager of the Oil Well Supply Company, announces in behalf of the company, the appointment of Mr. Grant Hubley as also Vice-President, but "In Charge Of Sales," with Mr. Thomas Fleming, Jr., as likewise a Vice-President, he being "In Charge Of Production." Further changes include Mr. S. Clarke Reed and Mr. Thomas Fleming, Jr., as having been elected members of the Board of Directors.

The Oil Well Supply Company comprises an organization of exceeding ability from the elective officers on through the departments, every link in the chain, or if we might so state, every tooth in every gear in each department being well selected.

Mr. Sands as Vice-President and General Manager has long headed the general operations of the organization, advocating and carrying out the ideals of *concentration* and consequent effectiveness, even to the point of being a strong believer in a concise descriptive slogan for his company, namely the one combined word "Oilwell", it being indicative of the purpose of the institution, though the title, Oil Well Supply Company, is the official name.

Under the present form of organization as indicated in the announcement, efficiency is a foregone conclusion though by no means would the present changes indicate that efficiency had not existed prior to the present. The new arrangement but recently took effect.

IN picking executives, let's not look only at a man's successes, but let's look closely to see if he has any failures in his record. And let us particularly concern ourselves with the way in which he recovered. The real executive is the man who can take things as they come, good and bad, and handle them.

---Allen H. Dalton in *Printers' Ink*

Labor is the arm which feeds and clothes the world, and capital is the life-blood which keeps that arm alive

New Walls, New Pipe Lines, New Contracts, Additions and Extensions. A Fund of Valuable News Gathered for the Journal Through Many Seasons.

Good will, like a good name, is got through many actions and may be lost by one

Arkadelphia, Gurdon, Prescott, Emmett, Hope, Garland, Fouke and Traskwood.

NEW YORK—*Fredonia*—The Frost Gas Company has applied for permission to increase its rate over the 40-cent rate now in operation.

OKLAHOMA—*Perry*—The local gas company has lowered its gas rate 8 cents per thousand, bringing the rate down to 50 cents per thousand.

PENNSYLVANIA—*Greenville*—The local gas company has increased its rates from a schedule ranging from 35 cents to 55 cents per thousand to a schedule having a range of from 50 to 60 cents net.

WEST VIRGINIA—*St. Mary's*—The Baily Gas Company has been granted permission to increase its charges for gas. The new domestic rate is 30 cents per thousand; industrial rate, 31 cents for the first 500,000 and 26 cents per thousand for consumption over that amount.

INCORPORATED

COLORADO—*Denver*—A recently chartered organization is the Platte Valley Oil & Gas Company, capital \$50,000. Incorporators: R. G. Campbell, W. A. McClintock and C. L. Lercher.

Trinidad—The Garcia Oil & Gas Company, capital stock \$250,000, has been chartered. Those named as incorporators are Joseph Cox, Andrew Putaturo and B. M. Cawley.

Walsenburg—The Templeton Oil & Gas Company, capital \$50,000, has been incorporated by H. C. Summers, D. B. Summers and C. L. Templeton.

MISSISSIPPI—*Magnolia*—The Mid-Central Oil & Gas Company, Inc., has been organized under the laws of the State of Louisiana, with a capital stock of \$500,000. Officers of the new concern are: George F. Hodge, President; Dr. C. E. Wilkins, First Vice-President; E. D. Richards, Second Vice-President; J. T. Woodland, Third Vice-President; Gus Llambias, Secretary-Treasurer. These with Clem G. Hearsy and W. T. McGuire, compose the Board of Directors.

John Robira and Gus Llambias were elected Associate Attorneys; J. H. Price, Local Attorney; E. B. Richards, Drilling and Field Manager; J. T. Woodland, Manager of Leasing Department; C. E. Wilkins, Manager of Sales Department, and George H. Dodge and Clem G. Hearsy, Consulting Geologists. President Hodge was elected chairman of the Executive Committee.

WEST VIRGINIA—*Kenova*—The Duty Oil & Gas Company of this city has obtained a charter. The new concern is capitalized at \$75,000. Those named as in-

corporators are: George W. Atkinson, J. E. Evans, H. A. Williams, W. W. Creasey, M. Riggs, Kenova.

Weston—The Norris & Cain Oil & Gas Company has been incorporated here with a capital stock of \$150,000. Those named as incorporators are: T. M. Cain, S. J. Fucey, Ira Morris, S. K. Hazlett, W. N. Baker, all of Weston.

GENERAL

ARKANSAS—*El Dorado*—The Oil Operators Trust has drilled in a wild gasser, in this field, about eight miles north of El Dorado. It is said that the well is producing 50,000,000 cubic feet of gas per day, and that the pressure is so strong that the boiler and part of the drilling equipment has fallen into the crater which extends from 300 to 400 feet around the well, and which is 70 to 100 feet deep. The well is in section 8-16-15 on the Murphy lease, Union County.

The Natural Gas & Petroleum Corporation has a gasser of very large producing capacity on the Lovett lease in section 6-18-15, about five miles from the city.

In the northeastern section of the district, the Terry Fields Oil Company completed No. 4 Smith in section 20-17-14, with an estimated production of 15,000,000 cubic feet of gas and 75 barrels of oil at 2,208 feet.

CALIFORNIA—*Signal Hill*—The Western Star Petroleum Company, in an effort to clean and wash out its No. 1 well on the Robinson lease, was rewarded by securing a gasser said to have a production around 15,000,000 cubic feet of gas, as well as considerable oil.

ILLINOIS—*Robinson*—On the Jones property, a short distance from the city, the Wabash Gas Company has started drilling for gas.

KENTUCKY—*Hancock County*—Gibson and associates, it is reported, have a fair gasser in their No. 1 on the Stewart lease, at a depth of 492 feet. The well is also making some oil, it is said.

Martin County—It is reported that considerable drilling activity is noticeable in this county, and that the search for oil and gas promises to be productive of good results. This county is located near the Kentucky-West Virginia state line in the Big Sandy Valley.

Morgan County—The Petroleum Exploration Company has an 800,000-cubic foot gas well on the Elizabeth Amyes farm.

LOUISIANA—*De Soto*—The Pilgrim Oil Company is reported to have completed a small gasser in No. 2 on the Ramsey property, section 34-13-6, at a depth of 3,550 feet.

Haynesville—A gas line has been completed by the Haynesville Natural Gas Company from production in

Nature yields only to work

cluster field to this city and gas service is now here.

Ray. A gas pipe line connecting with the Ray well in Webster Parish is shortly to be constructed, organization of a company to conduct the business in way. H. B. Schofield, who is President of the Pineville Natural Gas Company, will also be president of the new concern.

Charles. No. 1 on the Gray Syndicate lease owned by Morris McLean, is reported to have had initial production of 15,000,000 cubic feet of dry gas. The well was drilled to a depth of 4,000 feet.

Deer. At the annual meeting of stockholders of the Natural Gas Company, directors as follows were

S. D. Hunter, F. N. Florsheim, J. H. Trousdale, George Weaks, J. D. Pribble and Harry Briggs were elected. President, Samuel D. Hunter, President, J. H. Trousdale, Secretary, Henry J. Treasurer, J. D. Pribble.

Deer. The Ouachita National Gas & Electric Company is reported to have completed a good gasser on 20204, near Monroe.

Deer. The Sandridge property, section 10-20-4, Morris is reported to have completed a well estimated to have a producing capacity of 20,000,000 cubic feet at a depth of 2,176 feet.

Deer. The Hulier Carbon Company in No. 1 on the Ray lease has 12,000,000 cubic feet of dry gas at a depth of 2,162 feet. This location is in section 10.

Deer. Southern Carbon Company is reported to have tested a 13,000,000-cubic foot gasser on the Freeman being the company's eighth well on the lease. It is in section 13-19-4E, and came in at a depth of 1,160 feet.

Deer. The Standard Oil Company has two wells in the Bellevue field, one with a capacity of 10 cubic feet, the other with a capacity of 2,000 cubic feet. Both wells may be drilled deeper to ease production.

Deer. Reserve Natural Gas Company has completed a gas line from the Bethany gas field to this city, providing a greatly augmented natural gas supply. The line covers a distance of twenty-five miles as constructed at a cost of \$200,000. The additional gas supply secured is said to be around 70,000,000 feet per day, not all of which, however, is available at Shreveport. Arkansas towns will also profit from completion of the line.

Deer. **Atchafalaya.** A plan is under consideration by the Atchafalaya Gas Company to construct a storage holder for natural gas. All gas available during the night when demand is negligible is to be stored in the holder and released the next day in addition to the normal supply available to take care of the peak loads.

Guernsey County. The Guernsey Oil and Gas Company, operating near Fairview, has brought in a good gasser. The well, it is estimated, will produce 250,000 cubic feet of gas and it may be drilled deeper to the oil sand. The gas was struck at a depth of 900 feet.

Marion. At Jackson Ridge the Plainsview Oil Company has completed its first well on the R. Vost farm and it is a good gasser in the Kenner sand, and produces as well some oil.

Monroe County. L. E. Carter and associates have a gasser in a test on Whitten Creek estimated at 3,000,000 cubic feet. The well was drilled to the Maxon sand.

Washington County. In Brush Creek township, Erick & Lindsey have a gasser in the Berea grit at No. 1 on the Profit Sharing Oil Association lease.

Sandusky. Recent figures published by the Sandusky Bulb Works of the General Electric Company show a production of 75,000 electric light bulbs daily. Natural gas and electric power in large quantities are purchased from the Sandusky Gas & Electric Company for use in their production.

OKLAHOMA. **Eastland.** Employees of the Empire Companies are being encouraged to form the habit of saving by the liberal cash payment plan upon which 8 per cent cumulative stock of the company can be purchased. Joseph L. Rosenmiller is director of customer ownership for the company, and has charge of the present selling campaign.

Bristow. A large gasser has been completed by the Bristow Natural Gas Company in a location not far south from the city. The gas will be used to supply local customers.

Caddo County. In a test west of the Cement field, E. W. Kinsley has 2,000,000 cubic feet of gas at 3,200 feet on the Daniels farm, section 35-5-11. This well is located in wheat territory. The well is being drilled deeper.

Chickasha. The Chickasha Gas & Electric Company has completed arrangements for obtaining a supply of natural gas from the Oklahoma Natural Gas Company, which in turn it proposes to distribute in this city.

Okfuskee County. Walter Phillips has completed a fair gasser in No. 2 on the Jefferson lease, section 13-11-11, at a depth of 2,285 feet.

Oklahoma City. At the last meeting of the season held by the Oklahoma Gas & Electric Club, composed of employees of the Oklahoma Gas & Electric Company, officers were elected as follows: L. L. Nathan, President, W. J. Brown, Vice President, and H. E. Lusk, Secretary. Regular monthly meetings of the club will be resumed in October.

Oklmulgee. The Oklahoma Oil Company in No. 1 on the Randall lease, section 20-12-12, is reported that it has 1,500,000 cubic feet of gas at a depth of 1,800 feet.

It's not hard work that breaks men down—it's worry.—The Ambassador

Osage County—The Sand Springs Home Company in No. 2, section 22-21-8, reports a fair gas production from a depth of 2,246-2,310 feet.

Stephens County—The Magnolia Petroleum Company has shut in 7,000,000 cubic feet of gas in its No. 1 on the Wilson lease, section 17-2s-7w.

Ash Bros. in No. 1 on the McMahan property in section 18-1s-8k reports a production of 36,000,000 cubic feet from a depth of 1,814 feet.

A yield of 19,000,000 cubic feet is reported in the No. 1 of the Robertson and others well on the McMahan property, section 18-1s-8w.

Tulsa—Minshall and associates in their No. 3 on the Marshall tract, section 8-16-12, have completed a good gasser at a depth of 1,932 feet.

PENNSYLVANIA—*Greene County*—In Richhill Township, the Manufacturers Light & Heat Company has a gasser at a test on the J. K. and Elizabeth Scott farm.

In Springhill Township, the New Freeport Gas Company has a gasser in the salt sand at a test on the John Minor farm.

Somerset County—The Cumberland Oil Company is reported to have leased 30,000 acres in this county, upon which development work will shortly be undertaken.

SOUTH DAKOTA—*Dupree*—A successful drilling operation in this section has led to the leasing of considerable acreage, around Dupree, and drilling will be shortly put under way in several locations.

TEXAS—*Del Rio*—A good showing of oil and gas is reported in a well which was drilled for water on the Bedell-Moore estate. Other drilling operations, it is said, are being arranged for in the same section.

Eastland County—The Invincible Oil Corporation in No. 1 on the Nelson tract, has a large quantity of gas, as well as 100 barrels of oil, it is reported.

Itasca—The Lone Star Gas Company having secured guarantee of a sufficient number of consumers, has agreed to extend its service to this town.

Mexia—L. K. Hughes and associates in their No. 1 on the McGraw tract in the Wortham district came in with 30,000,000 cubic feet of gas, and later started spraying oil, the volume of which is now reported to be 1,600 barrels per day.

Palo Pinto County—The Nelson Oil Syndicate in No. 2 on the French lease has a showing for 2,000,000 cubic feet of gas at 530 feet. This is in wildcat territory.

Rains County—The Texas & Pacific Coal & Oil Company, it is said, has a heavy gas showing in its No. 1 test on the Humphreys lease, near Lone Oak. The gas began to show at a depth of 2,800 feet.

San Antonio—A gas pipe line has been contracted for by the Grubstake Investment Company with the Hope

Engineering & Construction Company of Mount Vernon, Ohio, to extend from this city to a gas field in McMullen County. The line will cover a distance of ninety miles, and is to be completed by November 1st.

Stephens County—Gohlson and associates in No. 1 on the Gohlson lease reported 6,000,000 cubic feet of gas at 7,465 feet.

The Pay-Tex Oil Company in No. 3 on the Lane lease was making 2,000,000 cubic feet of gas and some oil at 3,000 feet.

Young County—The North American Oil & Refining Company is reported to have large gas production in its No. 2 on the Melgard lease, as well as 150 barrels of oil.

Young County—The North American Oil & Refining Company has a good gasser in No. 5 on the Scott tract, a location about half a mile south of South Bend. The well is reported to be making around 500 barrels of oil also at the same depth, 3,921 feet. The well will be shot, it is said.

WEST VIRGINIA—*Boone County*—A total of 2,000,000 cubic feet of gas is the reported production from the Big Lime from the No. 1 well on the John L. Nestar farm in Paytona district, which was drilled by the Owens Bottle Company.

Brayton County—The West Virginia Central Gas Company reports the completion of the No. 3 well on the C. L. Engle farm in Otter district. The well was drilled 2,090 feet and is producing at the rate of 879,000 feet of gas.

Calhoun County—A gas test showed 40,000 cubic feet of gas in the No. 1 well on the county school lot in Sheridan district. The well was drilled 1,532 feet to the second salt sand.

The Chemical Oil & Gas Company, it is reported, has 700,000 cubic feet in its well in Center district, at a depth of 2,085 feet.

Located in Sheridan district, Thomas Crowley has a Big Injun sand gasser at his test on the Samuel Summers farm.

Martin Crowley reports the completion of the No. 1 well on the J. A. and M. Buck farm, Sheridan district, after drilling 2,172 feet. The well is producing 168,000 cubic feet of gas.

Cumberland—The Cumberland Oil Company, Inc., has completed its fourth well in Salt Lick District, and reports a production of 500,000 cubic feet of gas.

Doddridge County—In Central district, the Philadelphia Oil Company drilled its old No. 1 on the J. W. Ellifritt farm which was a gasser in the Maxon sand, through to the Big Injun sand, giving it a shot.

On Cabin Run in Central district, the Carnegie Natural Gas Company's second test on the W. S. Ross heirs' farm is a Big Injun gasser.

The habits you form count for more than the resolutions you make, because habit is a living resolution

County. On Stone Lick Run of Horn Creek, near the Hope Construction & Refining Company, Zeta O. Lively is a gasser in the Berea

County. One mile east of Wolf Summit, near the Reserve Gas Company has drilled its No. 1 gasser on the Virginia Thompson farm to heavy sand and has a showing for a light

oil township. The Hope Natural Gas Company's No. 1 John E. Strothers farm is a gasser in the Big

oil county. A production estimated at 1,000 feet of gas is reported from the No. 1 Calhoun No. 12 on the Huntington Land and Development tract in Calhoun Creek district. The gas is being

from the Weir sand. The Weir sand is the waters of Wetters Creek. Calhoun Creek dist. Owens Bottle and Machine Company has the No. 6 Black Diamond Coal and Coke well in the Weir sand and have a gasser for

county. In the Collins Settlement, No. 1 test on the Doulan farm is a gasser in the sand.

County. In Carroll district, the Superior Oil Company's test on the James W. Moore farm

is a gas well. The company reports the completion of the No. 1 well on the W. F. Fabor farm was drilled 1,591 feet and it is now producing 150 feet.

White has completed the No. 2 well on the W. Fabor farm, Carroll district, which, on test, showed 150 feet of gas.

County. In Mannington district, R. S. Menon, the M. M. Messenger is dry in all the

said county. In Clay district, the South Penn. Co. No. 4 on the Asa Lemley farm is a gasser in the sand.

County. In Lafayette district, the American Development Company has completed a series

of tests on the Samuel Bingham farm. It is a gasser in the Maxon sand and for 200,000 cubic feet a day.

County. In Center district, the Manufacturers Light & Heat Company has a Gordon sand gasser at a test on the L. L. & M. A. Snyder farm.

WYOMING. Center. The Producers & Refiners Corporation it is reported, will construct near this city a gasoline compression plant of large capacity. The Hope Engineering Company has on hand the contract for the work.

SOUTH AMERICA. Colombia. The Latin American Petroleum Company is reported to have completed two gas wells in the district of Columbia. The wells are located in the Maricao district.

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OLIVER BUILDING, PITTSBURGH, PA.

Since 1833 Engineers and Builders

CO.

GAS METERS

Meters for Gas, Water,
Air, Oil, Gasoline, Hydro-
gen, Oxygen, Acetylene
and Other Fluids.



Orifice Meters, Orifice Prov-
ers, Gas Meter Provers, Wa-
ter Meter Provers.

**Ironclad Cast Iron Dry Gas
Meter**—For domestic and small
industrial and commercial ser-
vices, using either Natural or
Artificial gas.



**Westinghouse Positive Fluid
Gas Meter**—For either high or
low pressure commercial or
industrial services using Natural
Gas, Artificial Gas or Air.



**Westinghouse Proportional Gas
Meter**—For large volumes of
Natural Gas, Casinghead Gas
and Air.

PITTSBURGH METER COMPANY

Company Member of American Gas Association

General Office and Works — EAST PITTSBURGH, PA.

SALES OFFICES :

NEW YORK — 50 Church St.
CHICAGO — 5 S. Wabash Ave.
KANSAS CITY — Mutual Bldg.

COLUMBIA, S. C. — 1433 Main St.
SEATTLE — 802 Madison Street
LOS ANGELES — Union Bank Bldg.

SIXTY YEARS

1862-1922
"OILWELL"

Out of the welter of the years—
The pit and pinnacle of history—
Years that have seen the rise and fall
Of proud dynasties,
The shadowing-forth
Of man's Utopian dream;
Decades in which we have learnt
Wisdom and sorrow,
And the sweet sunshine of peace!

Sixty Years! . . . Our fathers
Who are dead, were young men then.
Since then we have seen
Man conquer air,
Tame and harness the might
Of electricity,
And in the roar of factories,
Machinery driven,
Ease the burden of labor
By myriad devices.
From a hundred thousand wells, nature
Has yielded forth her treasured oil,
And we have turned it to as many ends!

Sixty Years! . . . Out of these years
Of testing and of service
Come, with a new force,
The reiteration of old truths—
That honesty and honor
Prosper of necessity;
That energy, expended wisely,
Is not wasted.
There have come these truths,
And, with the roundness of the years,
Trust and appreciation!

OIL WELL SUPPLY CO.
PITTSBURGH, U. S. A.

NEW YORK SAN FRANCISCO
LOS ANGELES TAMPICO LONDON



The Sign of Quality

all Over the World

OIL WELL SUPPLY CO.

World's Largest Manufacturers of Oil Field Equipment

WALKING and WAITING

AS long as it is a fact, according to actual statistics gleaned by the Winchester Repeating Arms Company, the Dennison Manufacturing Company, and other like institutions, that 75 per cent of the average salesman's time is spent in the non-productive work of "walking and waiting," it is a great pity that business men should not endeavor to cut down as far as possible the "waiting" waste-element, and it would seem that in these days of "jitneys" salesmen could ride at far less cost than to walk.

Time-study has been the means of discovering that about 10 per cent of the ordinary salesman's time is spent in clerical work; 15 per cent in actual selling, and, as we have said, 75 per cent in "walking and waiting." *"The Shield,"* discussing this same subject, says, "Sales engineers are justified in devoting much thought to the better planning of salesman's schedules." Let us add to this thought that advertising would also seem to be a direct answer in quite liberal measure to this problem of eliminating waste-time.

There is no "walking and waiting" when it comes to the advertisement; it is not a means of making one call and then another, and thereafter still another, until perhaps two, three, or perhaps four calls a day are made, before going on to the next town, but it reaches many hundreds of buyers at one and the same time, almost simultaneously, and it reaches buyers *behind the scenes*, as it were. The business man at his desk has moments to spare; it may be a period just prior to his morning mail; another, possibly a little later in the morning; still another on returning from lunch, and sometimes a little period

along toward the closing hour of the afternoon. These are the times when the busy business-man as a means of recreation, as well as of posting himself on the new things, improvements, etc., brought out in the trade, picks up his trade-magazine, and while undisturbed, and with his attention undivided he reads the messages of manufacturers found in the advertising pages, as well as noting the editorial matter and news.

A double-page-spread with plenty of room in which to tell the story and deliver the message, and likewise to illustrate the articles discussed, would cost the manufacturer but a mere pittance as compared with the tremendous loss of time that, as *"The Shield"* says, results from several no-order calls which a salesman has to make in many instances before he can close with a prospective customer.

Liberal trade magazine advertising and excellent sales ability on the part of representatives make a splendid combination, neither one without the other should be attempted. Introduce your concern, keep your concern before the trade constantly. Tell of the features you are offering, re-tell their merits. Keep your concern and manufactures ever in the buyer's mind through trade magazine advertising, thus when your representatives call upon the trade East, West, North and South the merits of your concern and of your manufactures are live topics. Advertising is a short-cut to short, productive salesmen's visits.

Lucius S. Bigelow

THE NATURAL GAS INDUSTRY

TRANSPORTATION GASOLINE PRODUCTION DISTRIBUTION

SUBSCRIPTION-
\$2.00 IN THE U. S.

CONTENTS FOR AUGUST, 1922

VOLUME 16
1922 NUMBER 8

PUBLISHER'S NOTICE

PUBLISHED MONTHLY
Advertising rates should be in by the 15th of each month to insure prompt publication.

ADVERTISING RATES on request
CORRESPONDENCE IS SOLICITED
from all those interested in Natural Gas and kindred industries.

Buffalo Long Distance (Day) Bell Telephone
Number 6864

Editorial Address: Publisher, Buffalo
Address General Correspondence, Editorial
and Advertising Matter to Central Office

Published by
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Charles S. Bismarck, President and Editor
Herman S. Bismarck, Vice President
A. Carter Bismarck, Secretary

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MEMBERS OF ASSOCIATION OF NATURAL GAS SUPPLY MEN

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905 Oliver Building, Pittsburgh, Pa.

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National Tube Co., Pittsburgh.
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Northrup Equipment Co., Parkersburg, West Va.

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Oil City Boiler Wks., Oil City, Pa.
Oil Trade Journal, New York.

Oil Well Supply Co., Pittsburgh.
Oxweld Acetylene Co., Chicago.

Parkersburg Mach. Co., Parkersburg, W. Va.
Parkersburg Rig & Keel Co., Parkersburg, W. Va.
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Superior Tube Co., Kansas City, Mo.

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Toledo Pipe Thr'd'g Mach. Co., Toledo, O.

Union Rubber & Asbestos Co., Trenton, N. J.
United Seal Co., Columbus.
Upson-Walton Co., Cleveland, O.
U. S. Rubber Co., New York.

Walker & Pratt Mfg. Co., Boston, Mass.
Welsbach Co., Gloucester City, N. J.
Westcott Valve Co., Seneca Falls, N. Y.
Westinghouse Elec. & Mfg. Co., Pittsburgh.
Wheeling Steel Products Co., Wheeling, W. Va.
Williams Tool Co., Erie.
Witman & Co., Columbus.
Williamsport Wire Rope Co., Williamsport, Pa.
Worthington Pump & Mach. Corp., Buffalo.

Yorke Derrick Co., Washington, Pa.
Youngtown Sheet & Tube Co., Youngtown, O.
Young, Wm. T. Drilling Eng. Co., Oil City.

ANNUAL CONVENTION NATURAL GAS ASSOCIATION OF AMERICA
and EXHIBITION OF SUPPLY MEN'S ASSOCIATION
Louisville, Ky., - 1923

FROM THE EDITORIAL MAIL BAG

BOARD OF SUPPLY MEN'S ASSOCIATION

The board of directors of the Association of Natural Gas Supply Men met recently at the Headquarters of the Natural Gas Association at Pittsburgh and elected officers as follows: Fred A. Miller of the S. R. Dresser Mfg. Co., Bradford (re-elected), Vice President, Otto Felix Equitable Meter Company, Pittsburgh, Treasurer, Clifford of the Pittsburgh Meter Company, East (re-elected), Secretary, Wm. B. Way, Pitts (re-elected).

After that was much discussed was the incorporation of the Association of Natural Gas Supply Men. Mr. Miller advanced the opinion that if the association were incorporated, its usefulness to the Natural Gas men would be increased.

The finances of the association are in excellent condition. The financial report shows a balance of \$5,000 credit of the association.

A committee was appointed whose duty it will be to study the condition of the association and make suggestions for betterment, and to examine closely into the advisability of amending the Constitution and By-Laws. The directors present at the meeting were: Fred A. S. R. Dresser Mfg. Co., Bradford, Pa.; Wm. Pat. Frick & Lindsay Co., Pittsburgh, Pa.; Wm. McKaysin Fulton Mfg. Co., Pittsburgh, Pa.; L. P. Mark Mfg. Co., Pittsburgh, Pa.; E. S. Rouney, Brown Sheet & Tube Co., Pittsburgh, Pa.; W. B. Oil Well Supply Co., Pittsburgh, Pa.; R. A. McManhattan Rubber Co., Pittsburgh, Pa.; Hugh National Supply Co., Pittsburgh, Pa.; Otto Equitable Meter Co., Pittsburgh, Pa.; and Wm. B. Natural Gas Association of America, Pittsburgh.

Adjournment followed the meeting.

ALL SEEK TO REDUCE TRANSMISSION LOSSES

The Bureau of Mines has asked the cooperation of gas companies in obtaining data on transmission losses of natural gas to the end that some means may be found and carried out looking to saving of some method of conservation. The bureau is asking the companies for data on their individual losses.

For the purpose of the Bureau to prepare a new manual dealing with the use of natural gas in the home, and to forth the necessity for conservation. R. A. C. Natural Gas Engineer is engaged on this work in connection with the Natural Gas Association.

WEST VIRGINIA ASSOCIATION TO MEET

ANNOUNCEMENT is made that the Sixth Annual Convention of the West Virginia Oil and Natural Gas Association will take place at Clarksburg, West Virginia, August 24th and 25th and 26th. The first two days of the meeting will be occupied with business sessions while Saturday, the 26th, will be pleasantly devoted to a basket picnic for all oil and gas men and their families. Clarksburg has a number of good hotels, and the suggestion is made that reservations should be made immediately.

The association last year deemed it wise on account of conditions to omit its annual convention and all indications are that last year's omission will be more than made up by the attendance at this year's meeting.

Matters pertaining to the coming event are in the capable hands of Edwin Robinson, Secretary-Treasurer of the West Virginia organization.

MEETING OF NATURAL GAS ASSOCIATION BOARD

A meeting of the Board of Directors of the Natural Gas Association of America took place recently in Pittsburgh with the following members of the directorate in attendance:

J. D. Creveling, President, F. L. Chase, M. W. Walsh, John B. Corrin, J. W. Dana, E. P. Whitcomb, L. K. Langdon, John B. Tonkin, L. B. Denning, H. J. Hoover, and Wm. B. Way, General Secretary.

H. C. Morris, T. J. Jones, H. A. Wallace, K. C. Kruck, and M. B. Daly sent word that they would be unable to attend on account of other business engagements.

H. Foster Ham, Director of the Bureau of Mines, has been elected honorary member of the Association. Mr. Ham was in Alaska at the time and the communication informing him of his election was forwarded to him there by Acting Director Hollister.

The Board voted to contribute \$200 as the association's quota toward the erection of a building for the Chamber of Commerce of the United States in Washington, D. C.

The motion picture entitled "The Story of Natural Gas" shown at Kansas City Convention has been approved by the U. S. Bureau of Mines and will now be made a part of the educational campaign to be conducted by the association. Natural gas refusing to be perished by the Publicity Committee will be employed to carry out this plan.

A membership drive was planned and methods of procedure discussed.

A nimble dollar spells prosperity

Natural Gasoline Meeting

*Natural Gasoline Manufacturers Association, Grown Strong in Its Short
Existence is a Great Help to Those in the Gasoline
Production End of the Industry*

THE Natural Gasoline Manufacturers' Association recently held its first annual convention in Tulsa. It was an unqualified success. Delegates from the Mid-Continent section to the number of 130 attended. The entire two days' program consisted of reports of the various committees of the Association, which reviewed the work of the organization during the past year, the first of its existence.

Following the reading of the reports which were approved, interesting discussion was indulged in. The out-gage problem, the Saybolt case, specifications, tank car improvements and Interstate Commerce Commission's regulations were considered in all their phases and it was the sense of the convention that much benefit had accrued to the natural gasoline industry through the activity of the Association and its work was warmly commended.

Following the reading of the reports, officers and directors were elected as follows: W. M. Welch, Tidal Refining Company, President; D. E. Buchanan, Chestnut & Smith Corporation, Vice-President; O. W. Crick, Highway Oil & Refining Co., Treasurer, who, together with W. L. Walker, Liquefied Petroleum Gas Company; R. R. Owens, Marland Refining Company; R. P. Humes, Transcontinental Oil Company; A. M. Jones, Amity Gasoline Company; A. J. Schlosser, Barnsdall Oil Company; B. E. Bush, Diamond Refining Company; C. R. Burke, Oklahoma Natural Gas Company; W. E. Burk, Highway Oil & Refining Co.; H. R. Johnson, Akin Gasoline Company; Emby Kaye, Skelly Oil Company; O. L. Cordell, Phillips Hi-Grade Refining Company; F. L. Chase, Lone Star Gas Company, and C. W. Mullalley, Arkansas Natural Gas Company, form the executive

The convention closed with a banquet at the Hotel Tulsa, at which D. E. Buchanan was toastmaster and R. P. Brewer, chairman of the Board of Exchange National Bank at Tulsa was the principal speaker.

President W. M. Welch presented the following, which was his presidential address for the year 1922:

PRESIDENT'S ADDRESS

Our Association was organized a year ago. It was conceived in necessity, born in adversity, and struggled through trials and tribulations until now, strong and healthy, it is ready for even greater usefulness than that which has marked the first year of its life.

We organized in a period of great depression in the natural gasoline industry. In various quarters doubt was expressed as to the ability, under the circumstances, of natural gasoline manufacturers to maintain an association.

It was said that if we organized at all, we should affiliate with the association of some other branch of petroleum industry. Our answer was—"We will not affiliate, but we will co-operate."

Our attitude was that our problems were peculiar to ourselves, and were neither appreciated nor understood by any persons but ourselves. On the other hand, we realized that the manufacture and use of natural gasoline has a great deal in common with the production and refining of petroleum. We, therefore, desired to co-operate, and have earnestly endeavored to do so. For instance, we have been working in the closest contact and the most complete accord with the American Petroleum Institute, which is taking the lead, and is rendering invaluable service, in working out the many general problems of the petroleum industry. Details of our co-operation with the Institute and with other important bodies will be mentioned a little later.

When we began, we laid down a policy, combining the strictest economy with intensive work, concentrated upon our own special and vital problems. There was urgent need of an Association because our industry had very rapidly become important. As an illustration to this, I may point out the fact that Mid-Continent natural gasoline manufacturers are paying to oil producers approximately \$45,000 a day for casinghead gas, which, before the development of our business, was virtually a wasted product.

Our industry can be said to be founded and developed upon conservatism. Until recovered by natural gasoline manufacturers and put to a useful purpose, the gasoline content of the gas coming from oil wells was lost, completely and absolutely lost. Today the value of natural gasoline saved annually approximates or exceeds seventy-five million dollars. This is true and practical conservation.

Many millions of dollars have been invested in Mid-Continent gasoline plants. But important as the industry is, and was when we began our work a year ago, the conditions in it then were to a considerable extent chaotic. This was due in some degree to the general

Adopt this: Think before you act—but don't think too long.

form distillation curve; thereby giving the motor more active power, improving starting and acceleration, saving the battery, greatly reducing carbon deposits, and, in general, increasing the satisfaction and economy of operating an automobile.

The important matter of safety in transporting gasoline has been handled in close co-operation with the American Petroleum Institute, the Bureau of Explosives, and the Bureau of Mines. The very effective work of the latter in this connection has been directly due to the activity of our Association. The issues raised by the Bureau of Explosives have been met in a constructive way. If no other accomplishment could be credited to the Association, the results we have been largely instrumental in securing in the matter of transportation regulations would have fully justified the time and money we spent.

The Bureau of Mines has requested that we publish in the above connection the joint report of our Association and the Bureau of Mines as an accomplishment of constructive value. A press notice issued by the Bureau of Mines under date of Jan. 4, 1922, says in part, "This association proposed specifications for the manufacture and marketing of natural gas gasoline, the adoption of which has insured a uniform and satisfactory product. The adoption of these specifications was also a distinct benefit to the smaller producer, for it put his product on the same basis as that of the larger producer. By the progressive step thus taken the industry is in a fair way to be again set on a firm basis."

The American Petroleum Institute will have a conference in New York on "Fire Protection Regulations and Reduction of Hazards to Life and Property," and through the local members of its Board of Directors, a committee of delegates to that conference has been selected. This committee of three members will represent respectively The Western Petroleum Refiners Association, the Mid-Continent Oil and Gas Association, and the Association of Natural Gasoline Manufacturers. Very beneficial constructive work in the interest of the whole industry can be expected from this conference.

Other activities have had to do with increasing the efficiency and reducing the costs of gasoline plant operation. Inspection trips have been made and plant design and operation have been freely discussed.

In the matter of the purchase of gas for plants, the Association played a leading part in obtaining the elimination by the Department of the Interior of the objectionable Chicago tank wagon price factor in settling for gas from Indian lands. When the Department insisted upon this factor, it established a precedent which proved oppressive. Its abolishment put gas payments on a much sounder and fairer basis.

You will have reports from our Secretary and a number of our committees. Their work is being done with energy, interest and intelligence. The members of these committees are specialists, and the reports represent the best ability and thought of the industry in their respective fields. This ability and thought is bringing

results beneficial not only to the natural gasoline industry, but to all who make, transport or market motor fuel. We still have many problems before us. Our work will never be finished. When we make an advance we must hold it. No branch of the petroleum industry at this time stands in a better relative position than our own, and we propose to maintain this position. We can do so with advantage to ourselves and with advantage to the other branches of the petroleum industry. The natural gasoline manufacturer adds to the value of oil producing properties by adding to their revenue. He aids the refiner by enabling him to put more of his product into motor fuel. He helps the distributor by assisting in making a better product. He benefits the immense army of automobile owners.

In the name of and for our membership, I wish to express their appreciation of the services of the men who have made this year's first work so successful. I want to give credit to Mr. Bourque for the able way in which he has done his work, and the members themselves I want to congratulate upon the spirit of fair-mindedness with which they have approached their problems. To all, I wish to offer gratefully my thanks for the most kindly spirit of friendliness which has been shown towards the efforts, in the interest of the Association, of its First President.

We want every natural gasoline manufacturer in the country, in West Virginia, Pennsylvania, Ohio, California, and Wyoming, as well as those in the Mid-Continent field, to join this Association. We need them, but they need us more. They are all fair men, and we are sure they do not wish to reap the benefits of our work without contributing to its cost. An unprecedented era of sound, stable and permanent prosperity for natural gasoline manufacturers is approaching. Let us make the most of its opportunities.

Secretary A. V. Bourque presented a very interesting address. He told of things accomplished by the Association, of what the Bureau of Mines had requested, and announced that now that the association has held its initial convention which was a marked success, it is high time to go into the field actively soliciting association memberships.

It will be remembered that this association finds its field that of the recovery of gasoline from natural gas

LOUISVILLE COMPANY ISSUES BOOKLET

A very interesting booklet has been issued by H. M. Byllesby & Company upon the occasion of the eighty-third anniversary of the Louisville Gas & Electric Company, showing the progress and growth of the company through these many years. The book is handsomely printed, and illustrated with many photographic reproductions of the company's plants, as well as a number of charts and maps outlining territory served and progress made.

The only way to quickly find success without working for it, is to look it up in the dictionary

Spirit of Public Service

The Fundamental Factors of Public Relations Rest to a Large Extent Upon Education of Employees

BY R. E. HANNA

City Manager, The Dayton Company, Cincinnati, Ohio

ABILITY to render satisfactory service to customers is largely the result of employee ignorance of the fundamental factors of relationship which should exist between the utility and



ASSOCIATE

Employees, in a general way, should possess not only a likeable personality but should down deep in their hearts have a broad sympathy and understanding of human nature in general.

The management of any utility is responsible to a marked degree for the proper education of their employees, certainly no more profitable or important investment could be taken under advisement than this subject which would bring about a more kindly understanding between customer and corporation.

matchless a great many employees and corporations have come to believe that with the payment of a salary or wage each week or month rests all. This is a line of least resistance. Both employer and employee easily fall, due to the intense competition found in many other lines.

Statements are offered in a spirit of constructive criticism of present-day operation. It seems necessary at this point in order to bring forcibly to mind the situation and a possible remedy.

As the success of a utility is largely dependent upon the very tangible item of good will, it behooves the management to develop a plan of education to bring it into the minds and hearts of the employees for the rights and possible varying terms of the customer, that we may be able to ensure our assets in respect and good will.

This plan of education should embody ways and means of assuring the customer of the every day willingness of every employee to do everything within reason to serve them. This thought is without doubt

the true basis on which to build a practical course of instruction.

Employees should be taught that it is quite natural with the human race to complain. They must not only be prepared to meet with various phases of it every day but must devise ways and means to cope with it satisfactorily and above all pleasantly.

Too many employees fail to appreciate the rights of the customer. A complaint, no matter of what nature, should serve as an opportunity to make a friend. Simple lessons in the art of adjusting little differences, an art which has reached a high state of efficiency in large mercantile and other business institutions, could be devised and profitably applied in the natural gas business as well as all other utility operations.

A thorough knowledge of every phase of operation would be a good starting point for any local natural gas distributing organization. A series of meetings might be inaugurated in which the operating employees and other personnel would be thrown together in a meeting thoroughly cooperative in character and spirit. To make this series of meetings both interesting and instructive a definite program would have to be arranged in advance to insure intelligent arrangement and produce maximum results.

Certain employees in each department should be selected and notified in advance of the part they are to take in the next meeting, asked to prepare a paper on a given subject, and after the paper is completed it should be submitted to the management for correction to insure that its contents are both constructive and fundamental in character.

This policy of getting employees together will accomplish many things, to wit:

1. Bring each member of the organization into a relationship of cooperation.
2. Build a loyalty and morale within the organization which would represent a far worth in the successful operation of the property.
3. Make each familiar with various phases of operation thereby enabling them to appreciate each others problems.
4. Enable the management to know those who are earnestly striving to do a job and those who are not or those who are temperamentally unbalanced.

find a short road to success would make good epitaphs for the vast multitude of failures.

meet the only source of revenue (the customer) day after day.

One employee in a utility organization is no better than another—the duties may be different, but the obligation of each is identical.

No employee of a utility can be a success or an asset unless his mental attitude is right—and we are more or less responsible for this.

The money for product, material, salary and wages comes from the public whom they serve, rather than from the corporation itself. Quality of service, promotion of friendships and absence of friction should form the basis for employee advancement in every utility organization.

Any employee who displays an unwillingness to line up and gain added knowledge of the business, then and there becomes a liability. If knowledge is power—and it certainly is in the utility business—they are shortsightedly turning down an opportunity to raise their earning power.

The man who reads the meters should receive the same consideration as the office employee. Their ability and willingness to learn to appreciate each others work is the key to a more perfect service to the customer.

Employees with socialistic tendencies—those who are out of sympathy with the world in general—those who openly or privately criticize the policy of the company, except to the management—those who imagine there is a wide gulf between customer and corporation, should either be taught the opposite or asked to seek employment of some other nature, because they represent a liability rather than an asset to the utility from whom they draw pay.

If there were as many gas companies in a town or city as banks or mercantile establishments, the service of necessity would be more near 100%, and the worries which we are called upon to endure would be eliminated. This situation being true, opens the way to successful methods of raising standards of service.

Natural gas companies, because of the very nature of their commodity—its production, purchase and transportation, with the ever-changing sources of supply which necessitates a corresponding change in rates and methods of service, are up against the eternal task of promoting good will.

The cycles of time (and they are short cycles, too) bring about the need of intelligent, responsible friendships—friends who can appreciate to some degree the problems which confront every utility engaged in the natural gas business.

Courtesy and kindness will make many friends in times of peace—and that's the time to make them. Not when the day of reckoning arrives and an impromptu campaign of customer education is launched for the sole purpose of gaining, if possible, a measure of good will in an

effort to stifle opposition to change in rates or franchise extensions.

Service is head and shoulders above any other phase of the natural gas industry, good-will, a spirit of fair play and absence of pernicious opposition follows a consistent policy of conscientious educational service.

Every courtesy—every kind word—every interest which employees, both in the office and outside, can bring into their association with customers, is a measure of protection—an insurance policy from year to year against adverse situations which hamper both operation and earnings.

PUBLICITY

Much money is appropriated for general advertising and publicity (usually upon the advice of an advertising expert) and passed by the management of the utility.

This expert may or may not be familiar with the intricate problem of promoting good will among the customers of the utility.

Too often, in my opinion, this publicity takes the form of reproductions of balance sheets—number of stockholders and other technical and profound subjects, which, if the masses (who actually compose 90% of our customers) could be induced to read, would leave them more or less in the dark as to what it was all about.

A portion of this money, which is now being expended in publicity channels, might be profitably diverted and used to provide this course of instruction for office and operating personnel.

In fact, it is quite necessary to organize within the organization a sympathy and understanding, and upon this the publicity campaign should be carefully built.

You can readily appreciate how ill-timed and fruitless an advertising campaign must be when the rank and file of the organization is not thoroughly familiar with every phase of the idea and ideals which it is designed to accomplish.

All advertising should be arranged to reflect the high ideals and purposes of the organization from meter reader to president. This advertising could be profitably used to educate the rank and file of employees and spur them on to a bigger and broader service effort.

So I say why not take a large portion of the money which has been going into publicity channels and expend it upon the floor of our offices in providing courtesy and education to customers who call on us at least once a month.

Teach the employees at the various windows and counters in our offices something about the advantages which will accrue through their ability to cultivate the customer.

Teach the meter reader, the complaint man, the salesman—even the men back in the field—the golden rule of service, which is, after all, the simple art of being nice to every man with whom they come in contact.

Many a man who punches a time clock lives to wear a full jewelled chronometer

thousand ways the value of service can be brought to attention of the employee, the employee seems to be compensating and satisfying his work because how valuable it is to his employer, and this rates his own work from day to day.

Best manager, or someone responsible for the care and comfort of the customer, should ever be at elbow to help and direct them while they are in line.

Department stores years ago learned the need of this, therefore they have developed a class of men in particular work, in fact they have made of it a science. Department stores found that the public really are timid, they need a smile and a word kindly, so they spend more money and are better satisfied, they feel at home.

Manager's office might be so located that it would be a step from the receiving teller's window to a waiting chair opposite him, and all disputes and complaints cleared out, and the customer sent away happy because of this kindly consideration from the manager.

Fact that so few people are in any degree familiar with problems of natural gas utility operation makes for a fertile field for educational work.

Visual demonstrations of various phases of service

save money and time.

Access to safety.

Secure comfort.

On these subjects tend to bridge the gap between gas and customer. Not only does it narrow the gap, but the desire of the lay person for additional information and could profitably become a year round item with every natural gas utility.

Continually contact is so valuable, and far reaching education is so telling, any other course seems deliberate, great, most costly earnings, but a golden opportunity to capitalize the priceless good will which is more abundant in every community.

Personnel of every gas office should be subject to careful analysis, ninety five per cent. of our customers are folks who are small wage earners. Their home is an eternal care, as we all know, the mainstay of home and the support of a family of children, almost a condition of mind which is more or less hostile and antagonistic toward utilities in general.

How to be courteous in the city or community in the utility is rendering service is a factor, and a key in the selection of types of office help to meet needs and handle complaints year in and year out.

Equipment is fundamentally important, morals of service and staff are a good test. Their habits after being instilled are an important element in determining how to serve and appreciate the customer's position.

Them. Their tendency to save money, their ability to originate a solution for daily problems, displays ability to analyze, an invaluable gift. Courtesy among other employees themselves is a constant and wonderful training, as a matter of fact a good place to start to teach employees to be polite, is right in our own offices. Courtesy manners are a matter of habit, practice alone will develop courtesy to a noticeable point.

Young men employees, addicted to novelties in dress and appearance or other noticeable peculiarities which stamp them as being neither of nor for the great masses whom they meet every day, are an irritable type to customers whom the utility is endeavoring to serve.

A utility office is no place for a display by either sex of the fashions of the day. The average office worker cannot afford it, therefore it disturbs or distorts the mind, which in turn does not promote civility. This mental attitude and extravagant display conveys to the customer anything but the kindly interest and sincere desire to serve which should represent the utility's most valuable asset.

A type of employee who has never served in the ranks in the work a day world finds it hard to appreciate the wage earner's problems. To them, overallly, calico, shawls and sixth grade educations do not merit consideration, courtesy. But after all, as he contributes to the volume of the business in the great department stores of our cities, the wage earner is the sole support of the utility, if it pays dividends, these dividends come from him, if a franchise is voted down, it comes from him, if a mass meeting is held, it is made up largely of his kind.

It means a lot to the utility to cultivate him, help him, serve him, share responsibility with him, assure him of his right to reasonable service, and when this program has been inaugurated and lived up to, many of our troubles will have faded away.

By courtesy, Natural Gas Association

THE MAGIC CHEF

A Nerve test monthly. Home Magazine is issued by the American Stone Company, entitled "The Magic Chef," the publication gaining its name from the fact that it would seem like magic if wonderful results attained by the setting of a temperature wheel, thus governing the room temperature through a remote means, whereby the electric gaswork is heating or cooling.

In the June number we note a report fully accredited to Tax Excess Magazine, which is published monthly, and to the American Tax Association, the high school channel certainly is well lighted, right. Another story quoted from the Tax Excess Magazine is a story of "Home's Adventure," which the market of a Irish lawyer must when appearing to a jury was well told.

We take off our hat to the "Magic Chef."

Mix a little heart as well as head with your business

British Association Activities

*British Commercial Gas Association Holds Convention Bringing Commercial Gas
Subjects to the Fore --- What is Being Done Abroad, Should Interest
Our Home Gas-Men Both in the Fields of Natural and
Manufactured Gas*

BEFORE printing extracts of papers, let us tell briefly something of the British Commercial Gas Association, which is doing fine work work across the sea.

Sometime since, the publisher of the GAS INDUSTRY Magazine in the United States received a letter from the then president of the British Commercial Gas Association stating that he desired to communicate an interesting fact to the founder of the National Commercial Gas-Association in the United States (addressing Lucius S. Bigelow, Publisher of GAS INDUSTRY Magazine, and founder of the N. C. G. A.), that he might know that inspiration connected with the founding of a commercial gas association in Great Britain in no small measure arose from the success of the National Commercial Gas Association in the United States.

Could anything more gracious have occurred than a communication of such nature at once recognizing the fact that the idea of specializing along commercial gas lines after a national fashion and through the aid of a national association originated in the states, and was found of such value as to make a similar movement thought desirable in Great Britain.

Our National Commercial Gas-Association in the United States, by virtue of uniting with the late American Gas Institute, has not lost its identity in this commercial gas labor, nor its specific connection with that field, since it is today the great commercial wing of the American Gas Association, and as a part of the gift of the N. C. G. A. and its activities, we find the Manufacturers' Section of the A. G. A., performing splendid work. However, on the other side of the Atlantic, the commercial gas movement remains as formerly exploited by an entirely separate organization from the other gas associations which are essentially technical.

Among papers presented before the British Commercial Gas-Association and before the Scottish Junior Gas Association at recent conventions, appeared one upon "Domestic Gas Production", by S. Tagg, Engineer and Manager of the Preston Gas Company; another, "Service to Consumer", by Harold E. Bloor; another, "Meter Surveyor Inspector, the Backbone of the Sales Department," by G. D. Alexander; another, "The Gas Company Show-Room", by C. S. Shapley. We are indebted to "The Gas Engineer" of Great Britain, for the following summaries of several of these papers:

GAS FOR INDUSTRIAL PURPOSES

By W. J. SANDEMAN

ALTHOUGH gas was used for industrial purposes previous to 1914, war conditions gave it such an impetus as it could never have hoped to receive under normal conditions. As a result, remarkable progress was made in a surprisingly short time. One authority tells us that in this direction more progress was made in five years than in the previous fifty. Gas for manufacturing processes may be said to have come into its own during the last seven years. Today, the urgent call is for increased production.

Indispensable as gas was during the period of strife, it is even more necessary during the present trying times, when the manufacturing world is endeavoring to get an economic balance and stimulate demand for its goods. Gas as an industrial fuel proved its worth during a vitally critical period in the nation's history, and consequently, having stood such a severe test, and emerged with flying colors, it may rightly be regarded with confidence by manufacturers who today realize its efficiency and almost universal scope of application. It has been estimated that something like 2,000 distinct industrial heating processes can be accomplished by gas; and while lack of time renders it impossible to dwell upon the technical uses of gas, it is felt that a few of its applications may with advantage be briefly referred to. All works require power, and the gas-engine has established itself as a most efficient, reliable, and economical prime mover. Where it is desired to distribute electrical power to various units scattered about a wide works, the current can be cheaply generated by a gas-engine and dynamo. This represents a sound financial proposition, as it is possible in this way to utilize electricity at a far more favorable figure than if it be taken from local supply undertakings. Should steam power be required, the requisite steam can be quickly raised by means of a gas-fired boiler.

Then there is that wide field of the heat-treatment of metals, in which processes gas-furnaces are an unqualified success, because of the ready manner in which temperatures can be controlled. Among these heat-treatment processes, one may mention tempering, hardening, annealing, case-hardening, etc. We also have metal melting by means of the gas-fired, crucible furnace. With natural-draught burners, temperatures of about

Mental ease is a full brother to physical laziness

1000° C. can be maintained on the floor of a "muffle" furnace. For temperatures over this figure, it is desirable—in order to ensure economical working—that the burners be of the "air-blast" type, working at one to two pounds per square inch air pressure. With air under pressure crucible furnaces will melt all kinds of metal up to the melting-point of pure nickel—1452° C. "Muffle" furnaces are also extensively used for firing glass and for enamelling processes. Brass, gun-metal, and aluminium on an average require:

(a) Starting from cold, 6 cubic feet of gas per lb. of metal melted,

b) Second heat, 4 cubic feet of gas per lb. of metal melted,

(c) Third and subsequent heats, 3 cubic feet of gas per lb. of metal melted.

Gas-fired steam-raising boilers are made in a variety of sizes upward from, approximately, 100 lbs. evaporation per hour. These boilers are unrivalled for laundries, cleaning and dyeing works, printing works, and for general heating processes, owing to their cleanliness, ease of handling, and unequalled efficiency. They raise steam to about 120 lbs. pressure per square inch from cold water in about 30 minutes, and require on an average, approximately, 2½ to 3 cubic feet of gas per lb. of steam evaporated.

THE GAS COMPANY'S SHOW-ROOM

By C. S. SHAPLEY

THE two main factors for show-rooms are novel and attractive display and courteous attendants. In making your display, show appliances, as far as possible, as they would appear in the house, and have as many as possible connected to a gas supply. Provide overmantels, so that gas fires can be put in. This will enable prospective buyers to see the finished effect; in other words, make it look attractive, and they will want it. In demonstrating hot water appliances, have your demonstration bath marked out for each five gallons, meter your gas, and work out the cost for the inquirer while he waits. The buyer can then see that the geyser will do what you say it will.

An even more important point is the attendants. Show-room attendants should be tactful, courteous and willing to show a desire to help all classes of consumers in making a selection. They have a very difficult duty to perform, as all classes of irate customers have to be dealt with, but if they possess the qualifications previously mentioned, they are in themselves wonderful advertising agents. If the consumer chooses an appliance which the attendant knows will be unsatisfactory for the purpose contemplated, the salesman should be able to explain why, and politely refuse the sale. The fact of refusing the sale will very often ultimately result in selling the proper article; in other words, a

good show-room attendant will not show or allow a customer to purchase unsuitable apparatus.

When complaints are brought in to the show-room, the attendant should take a personal interest in them. He will then, in all probability, send the consumer away content, with the knowledge that he will receive attention. A show-room attendant should never promise what he has no power to carry out. If the business concerns another department, he should first get in touch with the department concerned.

DOMESTIC GAS PRODUCTION

By S. TAGG

AN estimate of the average volume of gas used for domestic purposes in Lancashire has been prepared through the courtesy of the engineers of eleven of the principal undertakings, representing 67 per cent. of the gas sold in the country, who have returned their percentage of sales as ascertained for purposes of the coal rebate in 1919. These vary from a maximum of 92 per cent. for the coast towns, to a minimum of 63 per cent. in industrial areas, and the mean for the eleven towns is 78.7 per cent. The total sales for 1919 were 27,788 millions, and the proportion for domestic purposes was, therefore, 21,879 millions. As the total number of inhabited houses at the census of 1911 was 989,948, and the number of separate occupiers was 1,026,371, it might be assumed that the average consumption for domestic purposes is between 21,000 and 22,000 c. ft. a year for all actual and potential consumers.

A careful estimate of the possibilities of increased use for domestic purposes gave a figure of 30,000 c. ft. per occupier as the maximum for manufacturing towns under substantially present conditions, and this should displace about 20 per cent. of the coal now used.

To illustrate the rapid increase that had taken place in recent years the experience of Preston might be referred to. In 1909 the output in relation to population was abnormally low, mainly because no prepayment meters were in use. An examination of all accounts, excluding industrial users, gave an average of 13,232 c. ft. for 25,817 consumers, and of these 20,000 took an average of only 6,000 c. ft. each. Since 1909, 16,200 prepayment meters have been fixed, 9,380 being provided with cooking stoves, and the average consumption last year for all prepayment meters was 18,246 c. ft. In addition over 20,000 other appliances had been sold outright at a cost of over £52,000, and the domestic sales of gas had shown an increase of 80 per cent. during the past ten years, which had reduced the capital charges by 4½d. per thousand c. ft., which equalled 30 per cent. of the 1921 costs.

An increase in the domestic sales reduced the difference between the summer and the winter load; in 1891 the June output was only one-fifth of the December sales, whilst last year they sent out in June one-half

Get used to this: Turning up with a smile—and smiling even when you are turned down.

of the volume sold in December. The incidence of the load had an important bearing on the price of gas, but despite the improvement in the summer output there was a difference of 6.8d. per thousand c. ft. in the margin of profit between the minimum and maximum months last year.

The disturbance of economic conditions occasioned by the war appeared to have affected the Lancashire undertakings more seriously than in other parts of the country, for whilst Lancashire shows an increase of 3 per cent. in the six years since 1913 the increased sales over the rest of the country were 12 per cent. As 75 per cent. of the total gas sold in the country is supplied by local authorities, the importance from the national standpoint of further developing the sales of gas, and so reducing the evils of the smoke nuisance, should inspire those responsible for the administration of the gas undertakings to renewed and sustained efforts.

SERVICE TO THE CONSUMER

By HAROLD E. BLOOR

THE essential condition to the maintenance of present business and ultimate extension to the much larger dimensions to which we feel it should attain is public confidence in our desire to deal fairly with consumers and to give them ever better and cheaper service, said Mr. Bloor, at the Bradford Conference of the B. C. G. A. I regard suspicion of the gas meter as a distinct factor in checking the extended use of gas, and I could see nothing but a general belief in the fairness and honesty of gas undertakings strong enough to overcome it. Complaints as to meter registration rarely or never come from slot meter consumers, who pay as they go along, and have doubtless as definite a sense of buying gas as of buying meat.

We have appliances or piping in bad condition and suffer quite a lot of inconvenience and annoyance before they are moved to ask for relief. It is a fact beyond dispute that the general level of satisfaction with gas supplies furnishes no ground for complacency on our part, and it is a matter of urgency that the standard be improved.

Gas apparatus calls for a certain though very small amount of regulation and attention at the hands of the consumer, and both internal piping and service pipes may be partially blocked, with peculiar and confusing results. Thus you have complaints that the gas is bad only in certain positions or at certain times or at odd times. Again, burners are found with the air supply shut off or choked with dust or grease, or with an excessive air supply. All such troubles are unhesitatingly put down to "bad gas" by the consumer, and calorific charts or inspectors' tests are useless from his point of view.

To ascertain the conditions existing in a selected assortment of houses from which no complaint had been

received he caused a canvass of a hundred houses to be made by a tactful and efficient man, with the following results:

Houses Visited	100
Fully satisfied consumers	75
Consumers who stated apparatus required attention	8
Partly blocked services	6

A consumer's statement that he was "quite satisfied" was accepted during this canvass without question.

METER SURVEYOR INSPECTOR THE BACKBONE OF THE SALES DEPARTMENT

By G. A. ALEXANDER

THE meter survey inspector should be regarded as the backbone of the sales department. Inspectors ought not to be changed about from district to district, because nothing engenders a feeling of suspicion among customers more than the continual changing of inspectors. On the other hand, a regular call from the same official on the same customers promotes confidence and goodwill.

In a city it is rather difficult to fix what might be considered a satisfactory minimum area for surveying it, because where there is tenement property there is often a great deal of work with very little in area to show for one's labor. There are few districts in a city like Glasgow, with its high proportion of tenement property, where high-speed surveying could be kept up regularly. A large number of meters might be surveyed at the commencement of a survey when one was fresh on the job; but there are many things to be taken into account, all of which tended to prevent the maintenance of high speed. In the cities and suburban areas of cities with villa and cottage property, every district must be regarded as a problem in itself. There is one difficulty which he was sure would be apparent to all the members of the Association—the position of meters. It appears at times as if meters are fixed so that they were well out of the reach of gas inspectors—they never seemed to be placed with the thought that they would be read regularly and with facility. When it is realized that an inspector might be carrying with him an average of 150 or 160 surveying cards, a flash-lamp, and a pen or pencil, it would be conceded that he had almost to emulate the feat of Blondin in making the indices from certain meters. The latter are often as not in the most inaccessible positions possible.

Again, it might be more of a serpent-like crawl to get to meters in some out-of-the-way corners. I have in mind a certain street of a comparatively new property where there are probably 150 meters in all. I would rather have surveyed 100 of them twice over than the other 40 or 50. To outward appearances the houses look very much alike; yet in three or four of the tenements

Wealth does not come by the most diligent saving, but by the most diligent producing

the meters are placed in narrow cupboards and as near the roof as possible. As an instance of the risk an inspector had sometimes to run because of the inaccessibility of meters, I might mention a certain railway tunnel, the signals of which are lit by gas. To survey the meters the inspector has to walk along the permanent way from the station platform, a distance of 40 yards or so; and no indication is ever given him as to when it might be considered safe to read the meters. Another instance of inaccessibility is that of a meter in a church steeple, access to which was effected by an outside iron ladder about 20 ft. high, and it is necessary to step off the ladder to a platform in order to gain access to the door in the steeple.

In regard to the vexed question of assessment, where meters are either not indicating or only partially doing so, it seems to me there is only one person the consumers could not hoodwink, and he is the regular gas inspector operating in the district. He knows not whether or not to believe the sometimes fanciful stories that are told in such circumstances. Nine times out of ten the regular inspector would get at an equitable figure. Of course, I quite agree that if it were possible to make an exchange of meters within a reasonably short time, assessing would be much more simple; but occasionally it happens, that this is not feasible. The post of gas inspector, whether in town or country, is one that could be used in the very best interests of the concern he represented. In these days, there is a tendency to speed-up and get greater results; but the methods in operation are not altogether conducive to this end.

NATURAL-GAS GASOLINE PRODUCED IN THE UNITED STATES IN 1921

THE output of natural-gas gasoline in 1921 increased 23 per cent. over that in 1920, but the market for natural-gas gasoline was rather unstable because of the depression in the petroleum industry, according to a preliminary statement by E. G. Sievers, of the United States Geological Survey, Department of the Interior. The statement is based on incomplete returns from the producers and is subject to revision. Seventy-five per cent. of the output was recovered at compression plants and the remainder at absorption plants. The average daily production was 1,297,000 gallons, as compared with 1,054,093 gallons in 1920. The average production per plant in 1921 was 408,000 gallons, compared with 333,400 gallons in 1920.

A decrease in the value of natural-gas gasoline was naturally produced by the breaking of the market due to the depression in the petroleum industry. The total value in 1921 was about \$6,000,000 less than in 1920. The prices received by the producers declined to 8 cents a gallon, and the average price as computed from the total output in 1921 was 5 cents less than in 1920. Although the output was greater 5 per cent. less gas was

treated, so that the plants showed increased efficiency in 1921. The average yield of gasoline per thousand cubic feet of gas was 0.2 of a gallon greater in 1921 than in 1920.

Texas has become an active field for the natural-gas gasoline industry, with an output in 1921 that was 172 per cent. greater than in 1920, and occupied second place in the list of producing states. California also increased its production, but West Virginia, which was second in rank, showed a decrease and occupied fourth place.

Unblended natural-gas gasoline produced in the United States:

States	No. of Plants	Gallons Produced	Value of Gas Produced	Cents Av. Price	M cu. ft. Gas used, est.	Gallons per 1000 ft.
Oklahoma	304	195,960,900	\$22,509,300	11	78,229,800	2.5
Texas	68	89,749,600	11,668,400	13	26,751,700	3.4
California	77	59,483,300	10,627,600	18	63,916,900	.9
West Virginia	204	53,557,600	9,772,100	18	135,631,300	.4
Pennsylvania	305	19,989,600	3,303,200	17	46,482,800	.4
Louisiana	28	15,420,300	1,830,200	12	46,451,700	.3
Wyoming	7	14,557,600	1,599,600	11	4,559,600	3.2
Ohio	55	10,310,000	1,996,400	19	39,861,100	.3
Illinois	89	6,358,500	919,200	14	2,992,800	2.1
Kentucky	9	4,241,900	835,000	20	16,520,100	.3
Kansas	11	3,663,000	602,900	16	7,825,800	.5
New York	4	366,200	54,000	15	203,000	1.8
Total, 1921	1,161	473,658,500	65,717,900	14	469,426,600	1.0
Total, 1920	1,154	384,743,922	71,788,122	18.7	496,430,952	.78
GASOLINE PRODUCED						
Total, 1921	957	355,346,900	46,038,200	13	134,817,400	2.6
Total, 1920	967	281,131,973	50,272,961	17.9	112,887,802	2.49
GASOLINE PRODUCED BY ABSORPTION						
Total, 1921	204	118,311,600	19,679,700	17	334,609,200	.4
Total, 1920	187	103,611,949	21,515,161	20.8	383,543,150	.21

SCHEDULE OF GAS RATES

THE city of Cleveland is still in the throes of controversy over gas matters, and the following is quoted from an ordinance drafted to regulate and fix the prices and terms upon which the East Ohio Gas Company, its successors and assigns, should, according to the ordinance, furnish natural gas during the ensuing ten years:

Be it ordained by the Council of the city of Cleveland, State of Ohio, that

Section 1. Parties. Wherever in this ordinance the term Company is used, it shall be understood and intended to mean The East Ohio Gas Company, its successors or assigns, and wherever the term City is used, it shall be understood and intended to mean The City of Cleveland, a municipal corporation, its successors or assigns.

Section 2. Rates. During the period of ten (10) years from and after the passage of this ordinance, its acceptance in writing by the Company and its due publication, the Company may charge, and it is hereby required to furnish natural gas to the City and its inhabitants at the following prices, to-wit:

(a) A service charge of twenty-five cents (25cts) per month for each meter installed and connected, whether

or not any gas is furnished; for which service charge the Company shall not be required to furnish any gas; and

(b) A primary charge of thirty-five cents (35cts) per one thousand (1,000) cubic feet for all gas furnished; and, in addition thereto and superimposed thereon, secondary charges for gas furnished in any period of thirty (30) days to any one consumer at any one location, regardless of the number of connections or meters through which such gas is delivered or measured, as follows:

Ten (10) cents per one thousand (1,000) cubic feet for all gas in excess of five thousand (5,000) cubic feet and not in excess of ten thousand (10,000) cubic feet;

Twenty (20) cents per one thousand (1,000) cubic feet for all gas in excess of ten thousand (10,000) cubic feet and not in excess of twenty thousand (20,000) cubic feet;

Thirty (30) cents per one thousand (1,000) cubic feet for all gas in excess of twenty thousand (20,000) cubic feet and not in excess of thirty thousand (30,000) cubic feet;

Forty (40) cents per one thousand (1,000) cubic feet for all gas in excess of thirty thousand (30,000) cubic feet and not in excess of fifty thousand (50,000) cubic feet;

Sixty (60) cents per one thousand (1,000) cubic feet for all gas in excess of fifty thousand (50,000) cubic feet and not in excess of one hundred thousand (100,000) cubic feet; and

Eighty (80) cents per one thousand (1,000) cubic feet for all gas in excess of one hundred thousand (100,000) cubic feet.

(c) The Company shall quarterly pay into the Sinking Fund of the City of Cleveland fifty per cent. (50%) of the gross revenue derived from secondary charges, which sums shall become the property of the City of Cleveland. The Company shall retain all the gross revenue derived from service charges, all the gross revenue derived from primary charges, all the gross revenue derived from forfeited discounts, and fifty per cent. (50%) of the gross revenue derived from secondary charges.

(d) Bills computed at the foregoing rates shall be payable at the main office of the Company in the City of Cleveland, or at such branch collection agency or agencies therein as said Company may from time to time establish therefor, on the first day of each month, or such other date as may be established by the Company for the maturity of bills in said City or portion thereof, subject, however, in the case of each bill paid within ten (10) days from the first of the month, or other maturity fixed therefor, to a discount of five (5) cents per one thousand (1,000) cubic feet.

Section 3. Extensions. The Company shall extend its pipes and mains for furnishing natural gas to and upon any dedicated street in the City of Cleveland as now defined, or as may hereafter be extended, whenever any group of prospective consumers shall deposit with the Company an amount equal to fifty per cent (50%) of the cost of installing such pipes and mains, and, during

a period of ten (10) years after the installation of any such pipes and mains, the Company shall quarterly repay ratably to the persons making such deposits amounts aggregating fifty per cent. (50%) of the Company's share of gross revenue received from consumers to whom gas is furnished through such pipes and mains, provided that the amounts to be so repaid shall be limited to the amount so deposited for each extension. If the Company fails or neglects to comply with the provisions of this Section, for each and every day that such neglect or failure continues after six (6) months from the receipt of such deposits by the Company, it shall pay to the City as liquidated damages the sum of One Hundred Dollars (\$100) per day.

The title of the circular issued for the public of Cleveland, and from which the foregoing is an excerpt, bears in large type the words, "Fifty-fifty Profit Sharing Schedule."

GAS BURNER FACTS

THE Bureau of Standards is called upon to investigate and test very many gas devices of which not a few are termed "gas-saving." After making a number of tests, the Department has stated, "There is no justification for the exaggerated claims of economy made for any of the gas-saving devices that were tested in connection with this particular investigation." Those who are approached by individuals or concerns offering burners claiming "special efficiency" or "gas-saving," or "safety," should use exceeding caution before buying or adopting such offerings.

One burner submitted showed excellent efficiency, but the advantage was completely offset by the odor given off and the large amount of carbon-monoxide produced. The report adds, "Remembering that 0.04 per cent carbon-monoxide in the atmosphere is the maximum amount that should be tolerated even for an hour or two of exposure, it is readily calculated that the concentration in an unventilated room of ordinary size, soon becomes dangerous and unhealthy if such gas-saving devices are operated for a short period of time. If several gas-savers are used at the same time, the hazard becomes extremely acute. Notwithstanding the fact that these tests were made in a large and well ventilated room, the persons making the tests experienced severe headaches."

There are many designs of so-called gas-savers on the market. None as yet, however, so we are informed, have passed the test which would prove them what is claimed for them. Had any of these devices enjoyed the merit claimed for them, such merit, we are sure, would have at once been granted them by the Bureau of Standards.

In no sense whatsoever would we wish to discredit any worthy appliance, especially one which possesses the merit of efficiency or economy. However, we warn all of those to whom this message may come, to be exceedingly careful before adopting so-called burners or devices showing "remarkable" efficiency or economy.

Lend this: A hand to the other fellow as you go along.

Mechanical Bookkeeping

*Methods of Billing, Posting Charges to Consumers' Accounts,
Posting Credits and Balancing*

BY F. C. ISGRAHAM

Superintendent Commercial Department Southern California Gas Co.

THIS paper is based on the experience of the Southern California Gas Company. On January 1st we installed this system of accounting. We are satisfied that we shall achieve a great saving for our company.

In order that we may follow all operations step by step, we will start with the Consumer's Application for Gas—"Figure No. 1." This Application, as you

might mention at this time that this order is used for new installations and for turning on gas for new tenants where service had previously been used and meter had not been removed. Duplicate and triplicate are also used as an order to discontinue service or remove meter.

Orders are sent to Stencil Department, stencil is cut, a meter book sheet and ledger card are headed up and are returned to Billing Department. Number of meter, location, together with meter reading, is then placed on meter sheet and ledger card. All are then



OFFICE EQUIPPED WITH BURROUGHS MACHINES

will note, is in triplicate and is a combination of Application and work order. The original, which is signed by the consumer, is the Application; the duplicate and triplicate copies are the shop orders. All three bear the same number—an automatic numbering machine is used for this purpose. Ledger and folio numbers are also shown.

Application is entered on contract record, showing name, address, number of order, date of issue and date completed. Application is held in file until order is completed. Duplicate and triplicate are sent to the Service Department. Duplicate is given to the workman for execution, triplicate is held by the dispatcher as a check on workman. When the order is completed it is returned to the Commercial Department. We

filed in proper location. The Applications are filed in alphabetical order, and the meter orders are filed in numerical order.

In the Los Angeles Division there are one hundred districts, or zones, represented by meter books. Several books may be contained in one ledger. The meter book is arranged in the same sequence by location as the ledger cards. All agreeing with the information furnished on the Application. The form shown is to illustrate the principle—"Figure No. 2".

Before meter book is sent out for reading all stencils are compared to see that there is a stencil for each account, and also, if there should be any stencils for which there are no sheets, all discrepancies are investigated at once. Meters having been read in a certain

Men and nations who pinch the pennies hardest are never the richest

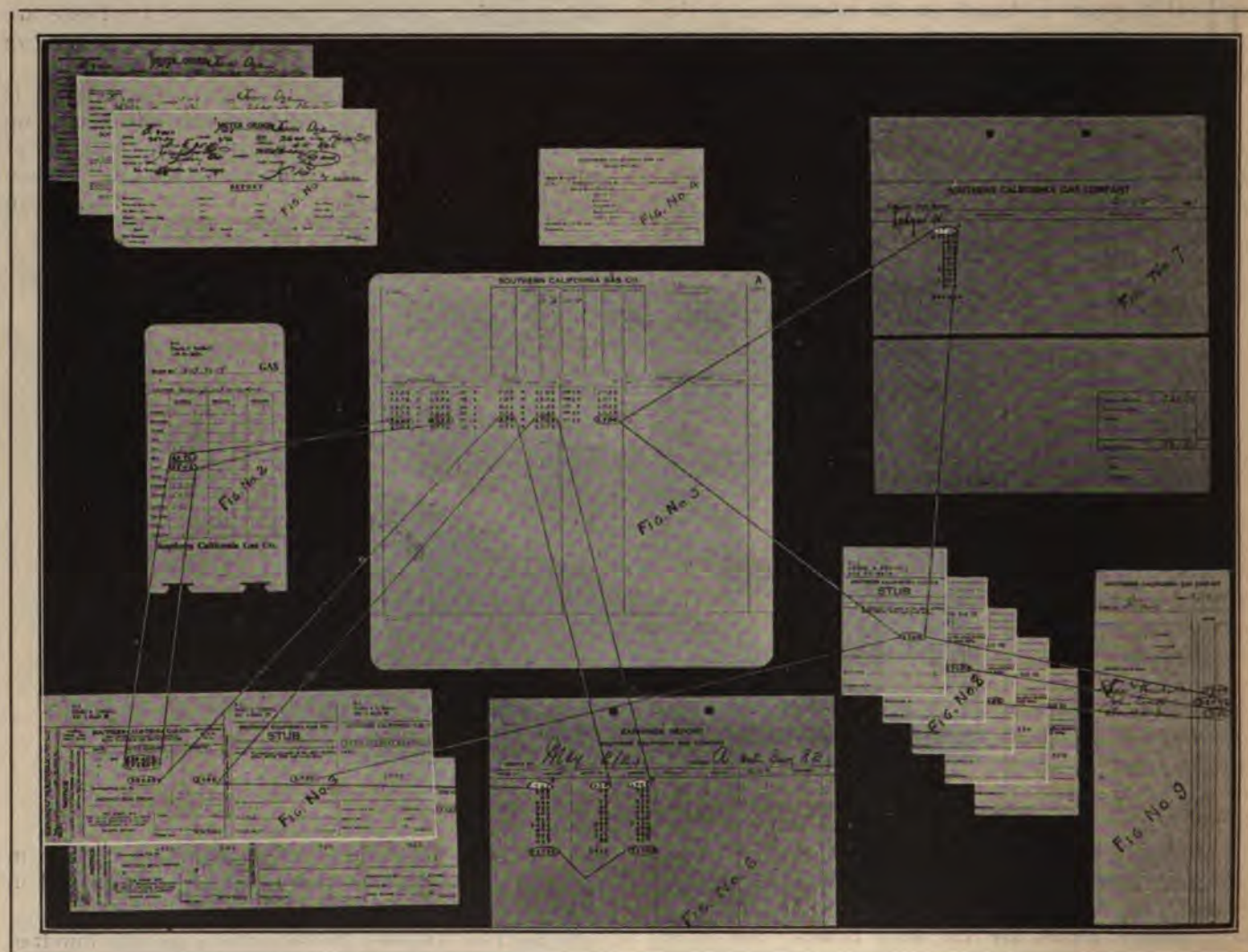
district, or zone, the book is turned over to billing clerk for billing. We use a Burrough's billing machine for this purpose.

The two readings, previous and present, and dates are obtained from book; machine automatically subtracts showing the number of cubic feet. Amount of bill is placed in machine with date. The machine automatically shifts carriage, printing two stubs. "Figure No. 3".

Bills are made at the rate of 1800 to 2200 per eight hours, varying as to location and rate. Billing being completed, amounts are compiled on Earnings report—"Figure No. 6".

Between the two readings, or the consumption in cubic feet. The carriage again automatically moves and the amount of bill is entered (non-add), completing operation. Bills are then checked against ledger cards; previous unpaid amounts are placed on bills at this time. Bill and ledger card must agree.

"Figure No. 6." Compiling of cubic feet and revenues from consumers' cards. All amounts are listed thereon and totaled by sections or divisions of the ledger. This total must agree with bills. Through this method the Earnings of any given section are immediately ascertained. These Earnings are entered in a supplemental ledger. Any additions or changes are



MECHANICAL BOOKKEEPING RECORDS USED BY SOUTHERN CALIFORNIA GAS COMPANY

Meter book is then passed to posting clerk to enter charges on Consumers' ledger cards—"Figure No. 4". This is done on a Burrough's posting machine. The operation is: present reading date is set in machine. Previous reading is entered in the subtract position. The carriage automatically moves to next position and changes to an add position. Present reading is entered, the carriage automatically moves to next position, when the total is taken, which is the difference

adjusted in this ledger and transferred to control ledger at the end of the month. All credits, however, are posted directly on the control ledger.

"Fig. No. 5." This card is a completed record of all clerks handling the accounts contained in meter book shown on card, giving the length of time for each operation. A record is kept to prove the efficiency of the different clerks or operators.

"Figure No. 7." Payments of bills are received from various sources, namely, payment clerks in main and branch offices, collectors, and through the mail. These payment stubs or bill stubs are routed in the order in which they follow in district or zone. See "Figure No. 8". This report is run on adding machine and balanced with deposit slips, or "Figure No. 9."

"Figure No. 9." This form is used by payment clerk as a deposit slip, and is made in duplicate. The original and cash are deposited with the cashier in Treasurer's office, the duplicate is receipted and returned to clerk making deposit. Duplicate is then attached to report—"Figure No. 8".

Bill stubs are then given to the clearing clerk who routes stubs, checks, and balances credits with cash, segregating them by zones for the various machine operators. This work is done after office is closed. Payments are credited on ledger cards by the same machine as is used for posting charges. The machine accumulates the total of all credits. This total must agree with predetermined total of cash received.

Balancing accounts is continuous—each operator balancing ledgers at a time each month according to schedule after collections are made and the outstanding accounts are at a minimum. A check on delinquent accounts is made from the second stub of bill, which is retained in file, which is under the direct supervision of the Chief Collector.

Consumers' card records are kept in long steel trays, varying in size, as needed, from six to nine feet in length. Machine and operator's chair are placed on a truck, which moves on a track. Electric current for motor is received through a sliding contact operating in a groove in center of track. In this manner the operator can move from one position to another—a brake holding truck in any position desired.

Our Los Angeles office has—1 billing machine, 4 posting machines, 37,544 accounts.

Our San Bernardino office—1 machine for billing and posting; 7,342 accounts.

Our Riverside office—1 machine for billing and posting; 4,875 accounts.

Our Glendale office—1 machine for billing and posting; 6,178 accounts.

Our Redondo Beach office—1 machine for billing and posting; 5,000 accounts.

Our Van Nuys office—1 machine for billing and posting; 3,323 accounts.

Our Downey office—1 machine for billing and posting; 2,362 accounts.

Southern California Edison Company. Los Angeles office, 120 E. 4th St.—3 billing machines; 8 posting machines; 88,800 accounts.

Los Angeles Gas & Electric Corporation. Pasadena office—1 machine for billing and posting debits only, credits being posted by pen; 17,500 accounts.

W. H. Barton, office manager of the Portland Gas & Coke Company, has contributed quite an article on the

progress of their Company in the use of machines—77,000 accounts being handled with ten Burrough's machines. These machines differ from those used by the Southern California Edison Company and the Southern California Gas Company, which use the same system in that they carry a tape of all operations, accumulating a total of the Earnings. These machines, however, do not make an automatic subtraction of each individual account, but show a total of all readings, previous and present, the difference of which should equal the total of cubic feet of gas sold.

In conclusion, mechanical bookkeeping is becoming more popular every day, being used by nearly all the leading banks and commercial houses. While in six months' experience we have not shown a saving, on account of changing systems, training our old employees to new system, which will always result in loss of time, we have held our own and will by the first of the year prove to the satisfaction of our Company that we have made a step in the right direction.

Due credit should be given the Southern California Edison Company of Los Angeles, the Los Angeles Gas & Electric Corporation, and the Portland Gas & Coke Company of Portland, Oregon, all of whom have been kind enough to give their time in compiling their reports.

—Courtesy Pacific Coast Gas Association.

CUSTOMER SECURITY-HOLDERS

AT Des Moines, Iowa, the following statistics are made available which should be of interest to those who are selling securities to customers, or are contemplating such move. At Des Moines the following is the record:

Total stockholders	758
Total customers	27,269
Total population served	140,507
Shares of stock sold, customers' ownership plan	7,160
New stockholders obtained from customers' ownership plan	758
Percentage of stockholders obtained from customers' ownership plan	100
Percentage of sales, deferred payment plan.....	33.00
Percentage of customers who are stockholders....	2.78
Percentage of stockholders to population.....	1.85

The residents are not limited as to amount of stock available to their purchase, and the shares are at \$50.00 each, but the customer must pay cash plus accrued dividends, the latter being figured at 8 per cent per annum; thus also 8 per cent will be made payable as return to all stockholders, the dividends being payable quarterly.

The company makes a special arrangement of \$5.00 down, and \$5.00 per month per share to meet the needs of the customer who is not financially strong. However, under this deferred payment arrangement, not more than twenty shares are sold to any one individual. More rapid completion of payments than \$5.00 per month per share may be made at the will of the buyer. The plan is working out excellently well in Des Moines.

Do your work better than anyone else could do it—that is the margin of success

Oven Heat Control

*A Bit of History --- Facts and
Features*

THAT "Necessity is the mother of invention" is proven by the rapid adoption of late of Oven Heat Regulators on gas ranges. Most inventions come by inspiration or suggestion, while very few comparatively are the result of a deliberate aim and intent to solve a difficulty or to improve a condition whereby to accomplish better results.

Anyone who has ever had anything to do with the selling or making of gas-cooking appliances, knows that faulty oven-regulation is the source of many complaints. This, in common with other gas-range makers' experience, was true at a factory of one of the leading range makers in Ohio.

As is customary in many gas-range factories, the superintendent of this plant was given the testing-out of ranges returned because of baking complaints and he invariably found that the returned range was not at fault but that the operator had evidently used too much or too little gas, as the case might be, or had kept turning the gas up and down as an impatient and inexperienced cook is apt to do in an attempt to arrive at a correct baking result.

Thus it was that Benjamin E. Meacham of Lorain Ohio, superintendent of the works, decided one day it was about time to seek a heat-measure that would overcome the uncertainty and inaccuracies due to the rule-o'-thumb baking methods of the usual housewife.

Going to his drafting board Mr. Meacham drew a plan for an automatic heat control, the design of which remains unchanged in principle to this day. This is said to have been some time early in 1913. The idea was novel and so simple, that Mr. Meacham constructed one and took it home to try out on his own kitchen range.

Mrs. Meacham used the heat regulator daily for some 18 months always in practical use. In all this time it never failed to function perfectly and gave her such excellent results that the factory decided to put the device into production and market it.

The first production range thus equipped was shipped in December of 1914, this oven-heat-control being made exactly like the model in use in Mrs. Meacham's kitchen. Hundreds of thousands have since been made and put in service but every one is, in principle, a counterpart of the original device.

In the experience of the makers there has never arisen a reason why the design should be changed, a most unusual record in the field of inventions.

As the device became well known, to attain production and thus to meet the rapidly increasing demand for measured heat in gas ovens, the device has merely been simplified in some parts, such as a steel stamped wheel and latch instead of brass castings, but never a change in the main parts or principle.

After awaiting the commercial test of the control in quantity use it was decided to broaden the output by placing it on the ranges of six extensive lines of ranges, instead of upon the line of but one manufacturer, as at first. This change in output plan was consummated in 1919, following which a vast national advertising campaign was set in motion based upon the known results of a five-year test on thousands of ranges. A fortune has and is being spent in this campaign to tell the American people what was modestly brought into being we are told, in 1913 on a single range, while now in 1922 thousands upon thousands, and thousands upon thousands more are in daily operation in housewives' kitchens. It was at first feared that the device would break down under time and use yet the original ranges thus equipped are still in use and giving satisfaction.

Where tests have been made of some of the first output, the controls have been found to be functioning accurately, and it is estimated that the device will outlast even the average life of a range, which most gas company authorities put at ten years.

The device, as we have intimated, was invented to remove the guesswork from baking, and measured-heat has done the trick.

A search was made in the standard works on cookery in an effort to find the proper degree of heat for various bakings. It was found that guesswork prevailed, thus to this device belongs the credit of establishing known temperature rules.

Not only was it found that cook-books were silent on the subject of temperature, but authorities had no common terms for describing oven temperatures. The "Slow" oven of one authority might be the "Moderate" of another. Not only that, but the same book would disagree with itself. That is, two different recipes which it was known should have the same tem-

Finish this: Every job you tackle.

perature, would each have a different term for the temperature. This meant that the author employed different terms to mean the one temperature.

While this is not criticism of the standard works on cookery, yet the fact remains that the expert had no means by which heat could be measure-controlled until this device, automatic in control was invented. Every ingredient that went into a baking could be measure-controlled except the heat, a most important factor. With the housewife having no means to reproduce a stated temperature, or hold it, the marvel was that bakings were ever successful and great was the credit due the housewife.

One of the first discoveries made with this heat-measuring device was, that given a precise temperature, a precise time-result was accomplished, and the same recipe baked at the same temperature achieved a given result in the same time. Thus, was created the phrase that is destined to best express the system, namely, "Time and Temperature" Cookery. This invention first made the expression possible.

No thought beyond a housewife's means whereby her ordinary bakings, pies, cakes, etc. might develop uniform results, was in the mind of Mr. Meacham when he devised this device for oven-heat measurement and control, but it was found that the field of this device is a broad one with possibilities at first unexpected. For instance, it has recently been stated that a china painter has found this measured-heat control an excellent method for firing china, in a kitchen gas range with absolute results.

One of the salesmen of the company first putting out ranges with this control, early found that a whole meal could be cooked in the oven, and that his wife could obtain a new freedom from pot-watching, with even better cooking results than formerly.

The device has simplified cookery; young cooks have found that they can obtain results equal to the work of the most experienced.

One case in view is the ten-year-old boy of a business woman who prepares and cooks the evening meal by the use of this sure way. He also bakes; yet he is no freak, simply an intelligent youngster who has found that with this automatic method all one has to do is to follow the recipe—no guesswork, simply accuracy in measurement of ingredients and heat.

A blind man, with this heat control, now does all the household cooking while his wife earns the living. After installing the range, the cook-book was read to him; he memorized it and now wins prizes at fairs with his bakings.

Later it was found that canning could be done successfully in this heat-controlled oven, and now not only is canning thus found to be easier, but the results are more desirable. The appearance and flavor is superior to old accepted methods.

There was no data at hand to follow, therefore original experiments had to be made. Before the present oven-canning method was launched publicly, hundreds of experiments, not only in the laboratory but in many homes, had been made.

To illustrate the ease of canning in a temperature-controlled oven, a man whose wife was in the hospital, put up over two hundred cans of assorted fruits and vegetables. After preparing the materials and placing them as prescribed in the oven, he would visit with his wife at the hospital for several hours while the preserving process went merrily on. The results of that summer's work were superior to any they had ever enjoyed before.

Gas company officials whom one would think would be first to adopt so excellent an appliance were actually the last. It was the small merchant who accepted and put it over. Credit should be given to the manufacturers of the device, for the time and money spent in painstaking experiments to acquire the data for "Time and Temperature" Cookery.

When planning the "LORAIN" which was the original in oven Temperature Controls, every step of the way had to be devised. There was no oven temperature control to tally with or patents to interfere; it was a basic matter and the inventor chose the simplest and most logical way, and as a result "LORAIN" has led the way and stood the test.

These manufacturers have proven the value of the method and as well the fact that the design will stand-up under severe and long usage.

We do not attempt to describe the mechanism of the control. This we leave to the six divisions of the American Stove Company who have adopted the system and applied the "LORAIN" to their ranges. The particular design is an exclusive feature on ranges of the American Stove Company divisions, though other range-makers are now employing heat-controls of one or another design showing approval of the system of temperature control baking and cooking. The system is meeting with practically universal approval. It remains for the trade to designate which of all is the best device, the one to bear the banner of feature superiority. "Lorain" we are convinced alone carries the banner of originality in gas-range oven-temperature-control equipment, and originality is a worthy virtue.

WE COMMEND A CHICAGO JUDGE

HERE is an instance where a justice served a criminal as he deserved. It is indeed a relief to find that there are judges who believe that a criminal should be punished. We are informed that Judge Fitch of the Criminal Court, sentenced John Myer, who also uses other names, to serve ten months in the House of Correction, for collecting a gas bill from a gas consumer on the northwest side. This collection was made notwithstanding the fact that a badge is known to be a part of a collector's outfit, and also notwithstanding the fact that the People's Gas Light & Coke Company broadcasts a description of its employees' badges, which it describes as a round button two and a quarter inches in diameter, enameled in silver, blue, white and black, with the words "The Peoples Gas Light & Coke Company," which appear on a scroll border, also the badge displaying the word "GAS" in red letters in the center.

One of the best things a salesman can learn is how to make a long story short



THE ADVERTISER

THE PUBLISHER

THE PRINTER

THE THREE GRACES

RECENTLY we picked up a paper-sample sent out by the Chemical Paper Manufacturing Company of Holyoke, Mass. Not only was the sample excellent, but on the face of the circular there appeared a halftone reproduction of a photograph taken to illustrate absolute satisfaction on the part of three elements in the publishing field that require excellent "stock" in order to produce best results; these three elements being "the advertiser, the publisher and the printer."

The reproducing of that photograph for use as stated, we deemed so clever that we requested the privilege of reprinting the illustration in our columns, applying the thought to our local conditions.

We find the advertisers in GAS INDUSTRY Magazine universally possessed of the thoroughly contented attitude indicated in the face of our friend to the left who, in the illustration is termed "the advertiser," and in view of this condition, OUR feeling is well pictured in the face of the center figure of the trio, a face which bears no evidences of discomfiture, but on the contrary all of those characteristics of publisher-satisfaction, which abide with us where the advertiser is well pleased with service rendered.

The third individual, the one to the right, namely, "the printer," he "who bears the heat and burden of the day" when it comes to the mechanical producing of a magazine, has that care-free expression which is almost universally found on the face of the chief of our mechanical department. Of course, once in a while a shadow flits over this face, but generally not because things are criticized by the advertiser, but because of some criticism on the part of either the printer and the publisher who consider themselves self-appointed judges of effects even where no fault is found or criticism is passed by the advertiser.

In a nutshell, be it said, *the advertiser in GAS INDUSTRY Magazine is a satisfied advertiser*, and as a consequence the publishers of GAS INDUSTRY Magazine are satisfied publishers, and the chief of the printing department producing the GAS INDUSTRY Magazine is a satisfied chief.

IN most businesses, competition is actually an asset because the biggest expense in selling is in the preliminary educational work. — *Through the Meshes.*

Two common failings: Eating too much and talking too much

THE PRINCE OF "WALES"

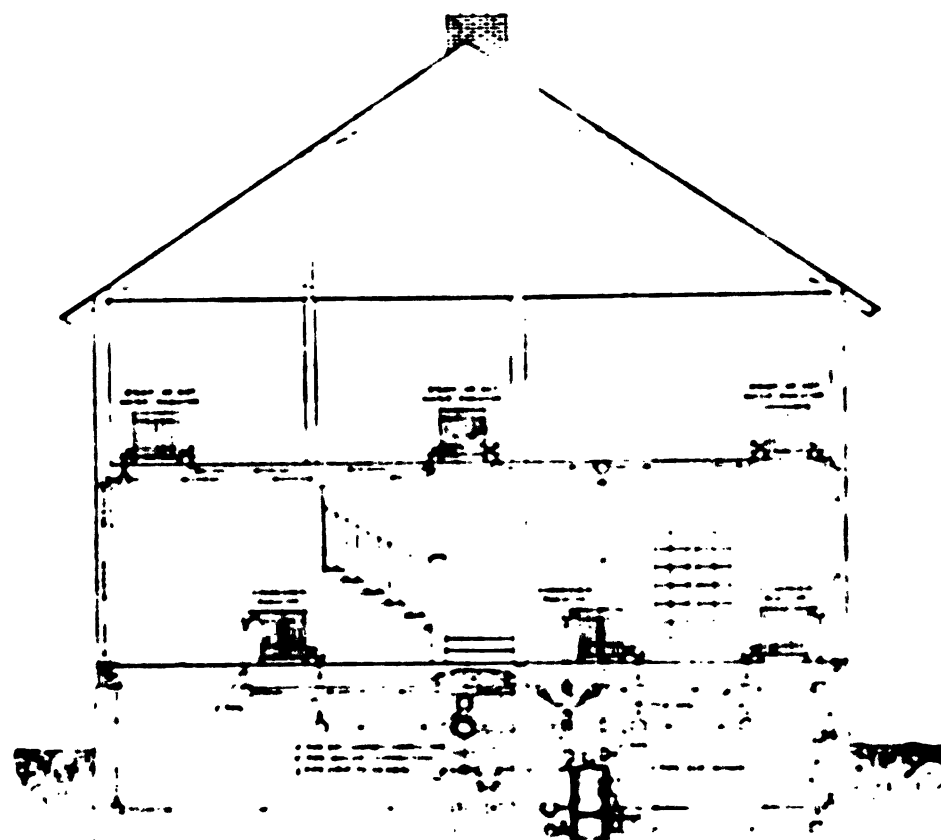
IT is no intent to be facetious but simply because the inventor's name is "Wales," has that new system of house and institution heating known as the "Wales System," been given the name of a royalty, of whom, because of like popularity, we heard much in the daily press during the recent

season. Wales' system of heating is not a "hot-air" system, but is applied to the warming of buildings through the agency of steam or hot water generated in a fired boiler. The "Wales" System is automatic from the standpoint of gas operation and electrical

all seasons, and may be used where gas is considered comparatively high in price because of the exceeding efficiency of this type of boiler, employing as it does automatically controlled, electrically driven air pressure.

There are stored in the boiler between the tubes, fire clay spheres which become intensely hot in a brief period after igniting the gas or coal, or let us as well say coke, for this device in combination form, built for gas or hard fuel, is especially well adapted to the burning of coke since the doors may be practically hermetically sealed similarly as refrigerator doors are, thus causing the coke to burn to excellent advantage.

It is, of course, a recognized fact that to intensify heat fire clay that has been properly placed, is a most



SECTIONAL VIEW OF TYPICAL RESIDENCE SHOWING PIPING ARRANGEMENT AND CONDENSER RADIATION TOGETHER WITH STEAM OR HOT WATER RADIATION.

excellent. It embodies a blower system, ensuring proper air and gas pressures and consequent uniformity of heating results.

The Wales Company has gone a step beyond simply a gas system in so far that it also provides a combination gas-and-coal boiler in the use of which the owner, without removal of burners, switch from gas to coal or gas to coal. Such combination is much appreciated where during a portion of the season, especially in the dead of winter coal is frequently employed, with gas being the medium spring and fall. On this combination boiler may be operated completely on gas, if so preferred.

The all gas boiler of the "Wales" system is a unit may be applied where gas is sufficient in volume at

excellent means of producing desired radiation and this fact has been made good use of in designing the "Wales" method.

Unlike any other heating plan with which we are conversant, the "Wales" system is not a condenser radiation method, one which extracts from the stack and delivers to space to be heated, the fine stack temperatures that usually pass from boiler direct to chimney, at the same time condensing the excessive amount of water found in certain gas, carrying this water through a drip pipe to sewer, instead of delivering it into the chimney where such delivery is possible upon removal of water has a tendency to deposit deposits on the room side of the masonry and likewise which water tends to disintegrate bricks and mortar.

Fortune has wings. It wouldn't get anywhere if it remained on the ground

Instead of the ordinary galvanized-iron flue or smoke-pipe, regular four-inch steel pipe is used to convey the flue-gases, leaving the boiler, this pipe reduced to two-inch where entering radiators for room-warming; continuing from radiators through lines of two-inch pipe to join into a four-inch steel pipe-connection into the chimney. Such plan embodies the placing of certain radiators in living rooms or basement as may be desired, the radiation from these radiators being resultant by reason of passing the stack-heat through them to the chimney, a feat that can only be accomplished under forced pressure which in the "Wales" system is developed without need of added equipment, by virtue of the use of the electric blower for injecting required air to insure proper combustion.



INTERIOR BOILER CONSTRUCTION SHOWING STRAIGHT TUBES AND FIRE CLAY GRANULES.

Where the words, "condenser-radiation" are noted, the meaning should be understood through the description which we have just printed.

Of course, the hot-water or steam radiators throughout the premises are in the usual manner installed on the regular pipe systems as would be found in any hot-water or steam radiator installation. The "condenser-radiation" radiators are extras, reducing the amount of usual-type-radiation otherwise necessary.

Every working part in the "Wales" system is enclosed, no part of the mechanism being exposed. No gas can pass into the boiler when the pilot light is not burning, and no shortage of water-supply due to shutting off of mains or other causes can affect the system, as immediately with a failure of water supply, the gas is automatically shut-off, preventing a burning out of the boiler or any other unfortunate result that might be occasioned in a steam or water system caused by low water and no automatic control of the heat-producing unit. The increased or decreased operation of the boiler

is entirely controlled through thermostatic connection in heated rooms.

The "Wales" system applies positive and reliable method through well planned means.

KEEPING EVERLASTINGLY AT IT

THE following very interesting anecdote which we are told is vouched for, illustrates well the slogan of "Keeping Everlastingly at it Brings Success":

"A bar of steel weighing half a ton was suspended vertically by a small chain. Nearby, a cork from a bottle suspended by a silk thread. The cork was started swinging so that it struck gently against the steel bar. Of course, it made no impression on the bar. But the motion of the cork was continued and at regular intervals it struck the great bar in exactly the same place. Five minutes passed, and still no effect was noted on the bar. After ten minutes the bar gave evidence of feeling uncomfortable. A sort of nervous chill crept over it. At the end of twenty minutes later the great bar was swinging like a pendulum of a clock."

Advertisers have found that it requires message-after-message and the topic repeated time and again with variations, in order to bring results in many instances, but when the results have gotten in motion, as for instance, the bar of steel, justification is found for the many preliminary strokes that seemed in themselves to be of little consequence.

These are advertisers who will try an insertion or two, or a few insertions in some magazine or paper, and because, as it were, the steel bar does not swing immediately, conclude that advertising does not pay them. Let such read the story of "A Bar of Steel."

"The Shur-on Chronicle" we recently noted had the following two paragraphs in its columns. These would seem to fit well as concluding remarks in connection with our article of the cork and the bar of steel.

"One bath doesn't keep you clean for life—you have to keep at it. One punch didn't knock Carpentier down—Dempsey kept at it. One shot didn't win the war—the boys kept at it. One ad—or one month's ads—won't bring the business—you've got to keep at it."

The public does not want to remember—you must make them. The public mind is the bar of steel—a dead weight. Your advertising is the little, tiny cork, but if you keep your cork swinging on that mass of steel it will swing—your way."

YOU cannot put over what you put off. Delay weakens your determination; postponement will push away your achievement. — *The Silent Partner*

The thing that matters is what you think of yourself, and that you believe in yourself—Beffel

A. G. A. PROGRAM

There are in the natural gas field various interests whose activities include now or may in the future include manufactured gas service. we print the following program of the convention of the American Gas Association. appended Program of Business Sessions is in tentative form, and being purely tentative subject to revision.

1922 CONVENTION, ATLANTIC CITY WEEK OF OCT. 23, 1922

MONDAY

MANUFACTURERS SECTION

Auditorium, Second Floor, Boardwalk Front
TWO THIRTY O'CLOCK

President of Chairman John S. DeHart, Jr., Newark, N. J.
and Secretary C. W. Berghorn, Jr., New York, N. Y.
of Nominating Committee George D. Roper, Rock
d. Illinois
President of Chairman and Vice Chairman
of New Officers
President
President

TUESDAY

GENERAL SESSION

Convention Hall, Ocean End of Steel Pier
TUESDAY MORNING—TEN O'CLOCK

Called to order D. D. Barnum (President)
of Secretary Manager Oscar H. Fogg
Reading Report and election of individual members
of Treasurer H. M. Brundage
of the President—D. D. Barnum
and Place Committee Report (1921 Meeting)
Program and By Laws amendments Wm. J. Clark
of Gas Appliance Specifications (Committee Report)—
m. T. Raach
The Are We Justified in Applying the Cost of Ser-
vice Principles in the Gas Industry (Address) Hon.
of D. Jackson member Railroad Com. of Wisconsin
President Nat. Assn. of Railway and Utilities
members
Lecture Showing A. G. A. latest film, "Around
the Gas With Gas" Auditorium No. 1 (second floor)
1st Floor

EXECUTIVE SESSION

Company Member Delegates eligible to attend
of Company Members
of Directors
of 1921 Nominating Committee
of Committee on Resolutions

ACCOUNTING SECTION

Auditorium No. 2, Second Floor, Steel Pier,
Boardwalk Front

TUESDAY TWO THIRTY O'CLOCK

of Vice Chairman Ewald Haase, Milwaukee
and Officers (Comm. Report) W. H. Pettes
more Accounting (Comm. Report) W. A. Diering, Bos-
ton, Mass.
Description of Typical Systems of Consumers
Accounting
Critical Analysis of Such Systems from the Standpoint
of Organization Karl Jorgensen, Bureau of Commer-
cial Economics, Chicago

J. Description of System, "Bookkeeping Without Books"
W. H. Cassell, Baltimore

COMMERCIAL AND PUBLICITY AND ADVERTISING SECTIONS

Meeting Jointly

Vernon Room, Haddon Hall, Facing Boardwalk
at North Carolina Avenue

TUESDAY TWO THIRTY O'CLOCK

Chairman's Report (Commercial Section) A. P. Post, Phila.
Nominating Committee Report and Election of Officers
(Commercial Section)
Sales Stimulation (Comm. Report) Wm. Gould, Boston
Industrial Sales (Comm. Report) F. F. Cauley, Chicago
Publicity and Advertising Section (Comm. Report)—A. A.
Higgins, Providence
Nominating Committee Report and Election of Officers (Pub-
licity and Advertising Section)

TECHNICAL SECTION

Convention Hall, Ocean End of Steel Pier

TUESDAY TWO THIRTY O'CLOCK

Remarks of Chairman C. N. Chubb, Davenport
Nominating Committee Report and Election of Officers—R. B.
Harper, Chicago
Committee on Carbonization and Complete Gasification of
Coal (Report) L. J. Willson, Boston
General Topics for Discussion

WEDNESDAY

GENERAL SESSION

Convention Hall, Ocean End of Steel Pier

WEDNESDAY TEN O'CLOCK

Rate Structure (Comm. Report) J. D. Shattuck
Public Relations (Address) J. S. S. Richardson, City Ed-
itor, Public Ledger, Phila.
(Presented for Publicity and Advertising Section)
Address Hon. W. D. B. Ames, Chair Public Service Com.
of Penna.
Accident Prevention (Comm. Report) Charles B. Scott
Reconstruction from Carbon Monoxide Asphyxiation (Comm-
on Report) By Dr. Vandell Henderson and Dr. How-
ard W. Haggard of the Laboratory of Applied Phy-
siology, Yale University, New Haven, Conn.

COMMERCIAL AND PUBLICITY AND ADVERTISING SECTIONS

Meeting Jointly

Vernon Room, Haddon Hall, Facing Boardwalk
at North Carolina Avenue

WEDNESDAY AFTERNOON TWO THIRTY O'CLOCK

Distribution Design (Comm. Report) H. C. Gurnee, Phila.
Further Presentation of the Industry Ideal Distribution Sys-
tem Paper H. C. Gurnee, New York
Description of a Distribution System in which Mains of
Four Inches or Larger W. S. Lord, Paper, B. V.
Pfeiffer, Philadelphia
Deposits in Gas Pipes and Meters (Comm. Report) H. I.
Brown, Pittsburgh
General Topics for Discussion
Committee on Consumers Accounting Report continued
Report of Sub-Committee on Small Gas Company Sys-
tems
Uniform Classification of Accounts for Gas Corporations
(Address) Gen. C. Mathews, Chief Statistician, Railroad
Comm. of Wis.

Advertising, by speeding up the turnover, permits production on a larger scale

- "Automatic Water Heating" (Address)—C. E. Bartlett, Phila.
 "Salesmanship in Public Relations" (Address)—E. J. Cooney,
 Lowell, Mass.
 "Possibilities in Heat Application of Modern Gas Appli-
 ances" (Paper).

THURSDAY**GENERAL SESSION**

Convention Hall, Ocean End of Steel Pier

THURSDAY, TEN O'CLOCK

- "The State Committees on Public Utility Information" (A
 Talk)—B. J. Mullaney, Chicago.
 "The Importance of Accounting in Rate Cases" (Address)—
 A. W. Teele.
 (Presented for Accounting Section)
 Address by John S. Irvine, President, National Association of
 Master Plumbers of the United States.
 "The Preparation and Sale of Coke for the Domestic Market"
 (Paper)—R. S. Fletcher and W. G. Rich, Providence.

(Presented for the Technical Section)

THURSDAY AFTERNOON, TWO-THIRTY O'CLOCK

- Main Extensions (Paper)—H. J. LaWall, Philadelphia, Pa.
 Continuous Inventory of Fixed Capital (Com. Report)—H. C.
 Davidson, New York.
 Uniform Classification of Accounts (Com. Report)—W. J.
 Meyers, New York.
 State Representatives (Com. Report)—W. A. Sauer, Chicago.

THURSDAY AFTERNOON, TWO-THIRTY O'CLOCK

Vernon Room, Haddon Hall

- "Why Gas Companies and the Plumbing Trade Should Co-
 operate and How" (Address)—National Trade Extension
 Bureau.
 "Why Gas Companies Should Undertake Domestic Science
 Work" (Address)—Mrs. Peterson, Chicago.
 "Advertising to Stimulate Sales of Merchandise and Appli-
 ances" (Paper)—J. F. Weedon, Chicago.
 Scrubbing and Condensing Facilities of a Coal Gas Plant and
 Their Effect Upon Tar and Ammonia Recovery (Paper)
 —J. R. Wohrley, New York.
 Scrubbing and Condensing Facilities in a Water Gas Plant
 (Paper)—F. W. Steere, Detroit.
 *General Topics for Discussion.

FRIDAY**GENERAL SESSION**

Convention Hall, Ocean End of Steel Pier

FRIDAY, TEN O'CLOCK

- President's Address (Report of Committee).
 "The Gas Appliance Price Situation" (Paper)—A. P. Post,
 Philadelphia, Pa.
 "Selling the Gas Bill" (Paper).
 (Presented for the Manufacturers' Section)

Open Forum.

(An innovation in the program this year will be the Open
 Forum. The time so allotted will be taken up with the
 discussion of management and policy problems. The
 chair will recognize any member who wishes to present
 his views or seek information on any subject of such
 character. Advantage should be taken of this oppor-
 tunity by the delegates to discuss other important sub-
 jects not on the program.)

Closing Remarks.

*Arrangements have been made to publish reports of cer-
 tain Technical Committees in the A. G. A. Monthly. Under
 the above item, whenever more time is available at a session
 than is required for the discussion of reports and papers listed,
 the presiding officer will call for a brief discussion of the
 work of committees whose reports have been published in the
 Monthly.

GAS-ELECTRIC COMBINATION

THE gas interests have long been accustomed to
 hearing much of "combination ranges." This,
 however, has grown to be a term almost uni-
 versally applied to ranges burning gas or coal.
 However, the Magee Furnace Company of Boston, Mass.,
 has now come before the industry with an offer of
 combination gas and electric ranges, the cooking top
 of the range being a gas feature, while the oven, which
 is built on the fireless-cooker principle, is heated by
 electricity. The oven is insulated, and embodies an
 electric broiler controlled from the Magee patented elec-
 tric switchboard on the front of the range.

The gas half, or cooking-top portion of the range is
 equipped with four gas-burners and a gas-simmerer,



GAS AND ELECTRIC COMBINATION RANGE

automatically lighted from a push-button. The finishes
 are ebony black, or pearl-grey. The official name of the
 finish is "Por-cel-a."

While the Magee Company offers these special ranges
 of combination type, they also manufacture and have
 done so for a very considerable period, all-electric
 ranges and straight gas-ranges, thus meeting the de-
 mands of combination gas-and-electric companies for
 straight electric-ranges to be sold through their electric
 department, or straight gas-ranges to be sold through
 the gas department, or combination ranges to be sold
 through gas or electric department, or straight gas-
 ranges through solely gas-companies.

The company illustrates the new gas-electric unit.

Heed this: "PREPARE!"

ECONOMICS OF PETROLEUM

The title to this notice is likewise a title applied to a new publication by John Wiley & Sons, Inc., the same being from the pen of Joseph E. Pogue, Consulting Engineer and writer of several volumes upon power resources, energy resources, etc.

The book has 325 pages, is 6x9 inches, has 151 figures, 16 over 100 tables. This work is bound in cloth, price \$10 postpaid.

We can best convey a knowledge of the field covered, printing a list of the features treated by the writer.

Table of Contents

Contents: Organization of the Petroleum Industry, Source Situation, Trend of Oil field Development, Production and Refinery Practice and Capacity, also Refinery book marketing Products, Transportation of Crude Petroleum, Gas and Fuel Oil, Petroleum By products, Natural Gas and Natural-gas Gasoline, Export Situation, Price Trend, Relation between Price and Production of Petroleum, Automotive Transportation, The Economic Significance of Cracking, The Motor fuel and Natural-gas Problem, International Aspects, Mexico as a Source of Petroleum, Relation of the Coal Industry to Oil Industry, The Oil-shale Industry, The Full Utilization of Petroleum, The Function of Statistics in the Petroleum Industry.

BOOK REVIEW

Dr. Anthony Blum has written a very interesting and instructive book, entitled, *Petroleum: Where and How Found It*. It appears in five parts bound under one cover the parts being as follows: Geological Phase, Constructive Features, Operative Phase, Commercial and Fiscal Features.

The work was copyrighted within the current year, and sold at \$2.00 a volume, being published by the Modern Book Publishing Company of Chicago, and D. Appleton Company, London, England. The Table of Contents contains subdivisions under each of the parts, starting with the origin and accumulation of petroleum, and following it through all of the various processes, including methods of extinguishing burning wells, finding oil and gas wells, shutting water in oil and gas wells, means of preventing waste, how to increase productive prospecting for petroleum, etc., etc.

Dr. Blum has added through this production an excellent compilation that will be helpful to many in the field as well as to heads of departments.

HER VIEW

A new-made widow called at the office of a leading insurance company for the money due on her husband's life. "Ed said I am truly sorry, madam, to hear of your loss."

"That's always the way with you men," she said, "you are always sorry when a poor woman gets a chance to see a little money."

COMPRESSOR CYLINDERS



It is a very fact that so much is being said regarding conservation in the natural gas field and the fact that the Bureau of Mines is taking so active a hand in this matter is proof positive that the industry of natural gas is passing through a transition stage from a vast non-appreciated volume to a lessening volume the value of which is impressing itself upon the minds of not only gas men, but the natural gas using public in the United States.

The time has come when every unit of gas is counted as having actual value and therefore each unit being a unit worth saving and when saved worth delivering for utilization.

When nature supplied pressure giving tremendous energy to the gas she delivered through casings at wells, pressure sufficient to carry the product of nature's retorts long distances through pipe lines without supplemental pressure, the need for compressor cylinders was not at all what it is today. Now, as the gas man knows, it is found necessary, not only to pump from wells that formerly delivered gas under their own pressure, but also to compress the gas in order to deliver it to distant points, in some instances a series of compressing stations being necessary. The C. & C. Cooper Company of Mount Vernon, Ohio, has produced a compressor cylinder that is indeed a most effective piece of mechanism.

One of the principal construction details allows the diameter to be varied over a considerable range by simply changing a liner. This, as one can readily see, not only saves the cost of a new cylinder, but provides a simple means of maintaining the highest possible compression efficiencies as the suction pressures fall.

In developing this Cooper compressor cylinder mechanism, self-cleaning plate valves were deemed so important that such have been incorporated as an improvement in valve construction. This improvement is both mechanically and from the standpoint of successfully handling the impurities frequently found in natural and casinghead gases, a very leading feature. It is said that the plate self-cleans some of the difficulties in bearing station problems while improving operating results.

Back of the building of these compressor cylinders is the element of years of experience and knowledge, of experience and expertness in the field of engine construction which has gone into the design of compressor cylinder construction.

To indicate the size of cylinder that has been given to every point at which the base plates have been made standard, so that the compressor cylinders of either of the sizes are inter-changeable on the same base.

The Cooper cylinder is a light weight machine, made of parts for designing a machine suitable for a high type work, and the materials are so selected that this construction is free from dependence

Try this: Courtesy in the face of discourtesy

AROUND THE BELT

New Wells, New Pipe Lines, New Contracts, Additions and Extensions. A Fund of Valuable News Gathered for the Journal Through Many Sources.

TRADE PERSONALS

Barcroft, H. G., of Bradford, Pa., has been elected President of the Pennsylvania Oil & Gas Men's Association.

Clifford, T. C., of the Pittsburgh Meter Company at the recent meeting of the directors of the Association of Natural Gas Supply Men, was re-elected Treasurer.

Felix, Otto, of the Equitable Meter Company, Pittsburgh, has been elected Vice-President of the Association of Natural Gas Supply Men.

Graeber, H. W., who was formerly in charge of construction work with the Oklahoma Gas & Electric Company, Oklahoma City, Okla., but left a short time ago, has again taken up his duties in the same capacity.

Graham, L. L., of Oil City, at the annual meeting of the Pennsylvania Oil & Gas Men's Association, was elected Vice-President of the organization.

Halporn, A. D., formerly on the sales staff of the Combustion Engineering Corporation active in the Philadelphia territory, is now representing the same company in its New York territory.

Karb, George B., former Mayor of Columbus, Ohio, has been elected President of the Ohio Association of Independent Oil Men, recently formed.

Lord, R. S., President of the Hope Engineering & Supply Company, accompanied by Mrs. Lord, recently visited the Wyoming fields.

McKinney, C. B., is President of the Municipal Gas Company, Dallas, Texas, formerly known as the North Texas Gas Company.

Miller, Fred A., of the S. R. Dresser Manufacturing Company, Bradford, Pa., has been re-elected President of the Association of Natural Gas Supply Men.

Moore, George N., has resigned from the office of President of the Shaffer Oil & Refining Company, Arkansas City, Kan., remaining, however, a member of the directorate.

Nobbe, F. A., Assistant Secretary and Assistant Treasurer of the Louisville Gas & Electric Company, Louisville, Ky., recently completed a service period of fifty years with the company.

Owen, C. L., Commercial Agent of the Muskogee division, Oklahoma Gas & Electric Company, has been elected Vice-President of the "Go-Get-'Em" Club, a new Muskogee booster organization.

Schonfield, H. B., President of the Haynesville Natural Gas Company, Haynesville, La., heads an organization being formed in Shreveport, La., which pur-

poses to construct a line to Homer, La., from Webster Parish where its production is located.

Steele, Charles E., of Port Colborne, Ont., has been elected to the Ontario Gas Board, representing gas producers in the Province of Ontario. The board comprises three members.

Thomas, Willis H., is now Sales Manager for the Oil Well Supply Company at the company's branch at Fort Worth, Texas.

Upham, D. A., oil operator of Mineral Wells, Tex., is reported to have purchased the properties of the Consumers Gas & Fuel Company, supplying Weatherford and Mineral Wells, Texas.

Waters, Edgar T., has been appointed Credit Manager of the Oil Well Supply Company's branch at Fort Worth, Texas.

Way, William B., has been re-elected Secretary of the Association of Natural Gas Supply Men. Mr. Way is located at the Association's headquarters, Oliver Building, Pittsburgh, Pa.

DECEASED

Hardee, William, Chairman of the Board of Directors of the National Supply Company, and one of the founders of the company, died at his home in Toledo, Ohio, at the age of seventy-six years.

Troutman, Philip A., formerly District Superintendent of the Carnegie Gas Company, and later widely known as an oil and gas operator in Western Pennsylvania, died at his home in Waynesburg, Pa., at the age of sixty-four years.

INCORPORATED

WEST VIRGINIA—*Charlestown*—The Meigs & Summers Oil & Gas Company has been incorporated in this city with a capital stock of \$25,000. Among those interested in the venture are: J. V. Reishman and W. J. Reishman, of Charleston; W. A. Charlton, Hinton; Thomas W. Shields of Frankford and W. D. Gwinn, of Green Sulphur Springs.

Wyndal—A charter has been obtained by the Wyndal Oil & Gas Company, incorporated for \$25,000. Those named as interested in the new company are: T. A. Deitz and U. G. Thomas of Charleston; G. N. Shirley,

If "luck" comes to you, it is through some sensible thing you have done or said

Vanetta; L. D. Moran, Wyndall; and C. W. Dilton, Fayetteville.

WYOMING—*Thermopolis*—The Thermopolis Gas Company has recently been incorporated with a capital stock of \$1,300,000. Directors in the new enterprise are H. P. Rothwell, S. Chan, and E. C. Rothwell.

NEW FRANCHISES

KANSAS—*Liberal*—A franchise to distribute natural gas in this city has been obtained by W. V. McQuigg and associates, who claim to have 10,000,000-cubic feet of gas a day in a well recently completed near the city, and who expect to increase that volume by the addition of production from a number of additional wells to be drilled in the near future.

MISSOURI—*Marshall*—A petition for renewal of franchise for a period of twenty years has been filed by the Missouri Gas & Electric Service Company, which has been supplying this city. The question of renewal is one that must be put to popular vote. The company's former contract expired in August.

TEXAS—*Huntsville*—A fifty-year gas franchise has been granted by the local city council to Dr. J. F. Snoke of Houston. The company will drill for gas in nearby fields.

San Antonio—The Southern Natural Gas Company of which M. M. Sweetman is President, has secured a franchise to supply natural gas to this city. The company has contracted for a pipe line to operate from gas fields in the Live Oak and McMullen County districts to this city, a distance of seventy miles.

PER CUBIC FOOT—RATES

CALIFORNIA—*Kern River*—The Valley Natural Gas Company, and the Midway Gas Company, lessee of the former company, have filed a petition with the Railroad Commission asking permission to increase its rates 2 cents per thousand to industrial consumers in the Midway, Elk Hills and Kern River fields.

KANSAS—*Coffeyville*—The Coffeyville Gas & Fuel Company is applying for permission to increase its rates from 60 to 75 cents per thousand, also for permission to establish a service charge of \$1.00 per month.

MISSOURI—*Joplin*—It is reported that the city will offer no further opposition to the increase in rates which is sought by the Joplin Gas Company, leaving the matter in the hands of the Public Service Commission. The

Commission, it is stated, will fight legally the increase made by the Kansas Natural Gas Company, from which the Joplin Company takes its supply.

It is expected that the Joplin Gas Company will be granted a temporary increase in rates pending the settlement of the matter by the Public Service Commission.

NEW YORK—*Elmira*—The Elmira Water, Light & Railroad Company has increased its rates from 76 to 78 cents per thousand. The minimum monthly charge has been increased from 78 to 80 cents per month.

OHIO—*Cleveland*—The East Ohio Gas Company has established a new sliding scale of rates in Shaker Heights, a suburb of this city. The former rate was 35 cents per thousand, while the new schedule ranges up to 75 cents per thousand.

PENNSYLVANIA—*Pittsburgh*—During the summer months the Equitable Gas Company, the Allegheny Heating Company, and the Monongahela Natural Gas Company has reduced its rates from 50 to 25 cents per thousand net for large industrial consumption.

TEXAS—*Temple*—The Temple Gas & Light Company has increased its rate from \$1.35 to \$1.65 per thousand.

WEST VIRGINIA—*Glenville*—The Glenville Natural Gas Company has been granted permission to temporarily increase its rate to 30 cents net for preferred consumers, and 25 cents for others on its list.

ONTARIO—*Bridgeburg*—A reduction in gas rates is being sought by local consumers. The local rate was increased last year from 50 to 75 cents.

GENERAL

ARKANSAS—*Eldorado*—A 35,000,000-foot gasser is reported by George & Jones in their test on the Murphy lease in section 8-16-15. It is said that George & Jones are negotiating with the El Dorado Natural Gas Company for the erection of a gasoline plant in the North Field.

The Terry Summerfield Oil Company in their No. 1 on the Moody lease, section 17-17-14, is reported good for 35,000,000 cubic feet of gas and 200 barrels of oil per day.

In the North Field Eddie Jones is said to have completed a 50,000,000-cubic foot gasser in section 16-16-15.

It is reported that the Henderson Gasoline Company of Nowata, Okla., is planning to construct a plant in this territory, section 8-18-15, which will have a capacity of 4,000,000 cubic feet of gas. This company operates several natural gasoline plants in northern Oklahoma.

Advertising pulls all the time, and there is no closed season for results

No. 1 of the Oil Operators Trust Company on the Murphy property, section 8-16-15, located nine miles from this city, is said to have had a production of 125,000,000 cubic feet when drilled in. However, a crater formed around the well due to its blowing in, after which it caught fire and burned for several days and finally extinguished itself, the flow of gas ceasing completely.

KANSAS—Dexter—A \$2,000,000 plant utilizing the helium from the local fields is spoken of. Interests represented by Charles S. Rader are reported to have leased 2500 acres of land for development.

Topeka—Application for a charter for the Empire Natural Gas Company, a \$12,000,000 corporation growing out of the proposed merger of the Kansas interests of the Empire Companies, has been filed. The corporations concerned in the merger are the Kansas Natural Gas Company and the Empire Gas & Fuel Company.

LOUISIANA—Haynesville—The Haynesville Gas Company is making rapid progress in laying its distributing system to all points of the city. Certain sections are already enjoying natural gas service. H. B. Scofield is President of the Company.

Monroe—The Ouachita Natural Gas & Oil Company of this city is reported to have completed a large gasser in section 29-20-4 at a depth of 2234 feet.

NEW MEXICO—Aztec—According to a report a very large gasser has been completed at Aztec, a place located not far from Durango.

NEW YORK—Olean—Joseph I. Hutchings, it is reported, has completed his No. 11 well in the Four-Mile field and reports good oil production at a depth of 1100 feet.

Tonawanda—Wells are to be drilled by the Republic Light, Heat & Power Company, it is reported, near this place on the Guideboard road.

Wellsville—The Alfred Gas Company has been purchased by J. W. Weir of Belmont, and H. C. Swarthout of Wellsville. Directors have been elected as follows: J. W. Weir, H. C. Swarthout, M. Casey and W. J. McAndrews.

NORTHERN OHIO—The Cities Service Company has approved plans involving the expenditure of several million dollars on improving the properties of the Ohio Public Service Company.

The plans approved call for the construction of a sixty-mile 130,000 volt steel tower transmission line from Lorain to Mansfield, Ohio, a similar line 55 miles long between Warren, Alliance and Canton, where it will tie in with the system of the American Gas & Electric Company which now operates a large power plant on the Ohio river. In addition, the plans call for the installation of a 20,000 K.W. turbine at the Edgewater plant at Lorain, Ohio, and a new 30,000 K.W. turbine in the Toledo Edison Company plant in Toledo.

This development work when completed on the Ohio properties at Mansfield, Massillon, Elyria, Lorain and Alliance will make available for service generating capacity now held in reserve in the individual plants.

Athens County—In York township, the Dorr Run Oil and Gas Company has drilled its test on the Frank Tedrow farm through the Clinton sand. It is a fair gasser.

Bremen—The Pure Oil Company has completed No. 1 on the Frank Miller farm in the Clinton sand. It is reported that the well is making 200,000 cubic feet of gas and is also spraying about a barrel of oil daily.

Cincinnati—The Welshbach Street Lighting Company has been awarded the city lighting contract covering a period of three years. The contract involves the upkeep of 4000 lights.

Cincinnati—At the annual meeting of stockholders of the Cincinnati Gas & Electric Company, directors were re-elected as follows: Samuel Assur, Alfred M. Cohen, Edward H. Ernst, Charles D. Jones, Richard K. LeBlond, H. W. Lothmann, M. E. Moch, George W. Noyes, Rufus B. Smith, Charles P. Taft and Charles F. Windisch.

Columbus—The Ohio Oil & Gas Men's Association will meet in this city October 4th and 5th. The sessions will take place at the Elks' Home. J. W. McMahon of Toledo is President of the Association, and W. H. Thompson, Columbus, is Secretary.

Haydenville—The Dorr Run Oil & Gas Company in its No. 1 on the Frank Morrow farm reports a 500,000-foot gasser in the Clinton sand.

Kent—The American Fuel & Oil Company has brought in a good gasser on the Oettler farm near this city. Production was reached at a depth of 450 feet. It is reported that a number of additional wells are to be drilled in this section.

Washington County—In Grandview township the Matamoras Oil and Gas Company's test on the James Anderson farm is a light gasser in the Big Injun sand.

OKLAHOMA—Bartlesville—A chapter of the Doherty Men's Fraternity has been organized by fifty employees of the Bartlesville Gas & Electric Company. Officers elected are: Thomas Patterson, President; Burr Reynolds, Vice-President, and M. C. Harrison, Secretary.

Blackwell—The Hope Engineering & Supply Company recently completed the construction of a 16 mile 10-inch pipe line from Tonkawa to this city for the Blackwell Oil & Gas Company. This new line will insure an ample supply of natural gas for this city and as well for the smelters located in this district. Dresser couplings and plain end pipe were used in the construction of the line.

Comanche County—The Gypsy Oil Company in its No. 5, section 24-1n-9w, is reported good for 20,000,000 cubic feet.

Creek County—In No. 2, section 23-16-9, the Jomack Oil Company has completed a 15,000,000-cubic foot gasser.

Lyons-Quinn field—A study of the effect of shooting wells as a means of increasing the production of oil in this field is being made by M. J. Kirwan, Petroleum Technologist of the Bureau of Mines.

Noble County—The Pennock Oil Company has an 8,000,000-foot gasser in No. 1 Endicott, section 34-25-1w.

Practice this: Holding your tongue between your teeth so it won't cut your throat.

Mad. Private ownership of the local gas plant was voted by 577 voters at a recent popular election, 133 three who were for municipal ownership. Municipal funds to the amount of \$40,000 were burned after most of the votes had been completed.

Madison County. In No. 1 section 2-10a-9c, Jennings town have completed a gasser having a production listed at around 10,000,000 cubic feet.

Atlantic Oil Producing Company in No. 2, section 2c, has a large gasser.

Phillips' No. 6, section 13-11-11 is reported as producing around 6,000,000 cubic feet.

Calbreath and others have a 4,000 foot gasser in No. 2 Davidson, section 2b-13-14, total 2,075 feet.

Land and others, in the Tiger Flats district, have a 10,000 foot gasser in No. 2 Wenden, section 14-12-12, 183-85 feet.

Madison County. A good gas producer has been completed by the Magnolia Petroleum Company in its No. 1 section 5-22-3.

Adams County. The Carter Oil Company in its No. 1 section 12-1n-8w has a gasser estimated at 11,000,000 feet.

Lone Star Gas Company in No. 2, section 18-1c, making around 12,000,000 cubic feet of gas per

Tex. The local board of trustees has applied to the State Commission for permission to construct a main from the Poteau fields to this city, so that natural gas service may be made available to the city of Wister.

PENNSYLVANIA Allegheny County. In Scott township H. O. Walters & Company have a light gasser on the Albert Snyder farm.

Madison County. Myers Long & Company are reported to have completed a 12,000,000 foot gasser on the Haworth farm in Washington Township.

Madison. The city has renewed its street lighting contract with the Welshach Street Lighting Company for a period of one year.

Pittsburgh. The Equitable Employees Association of Philadelphia and associated companies recently held a Night at the Duquesne Gardens. An excellent musical program was presented by members of the association. James A. Wakefield gave an interesting speech which he entitled "The Call of the Yukon."

Pittsburgh. The Pennsylvania Oil & Gas Men's Association meeting recently in this city, elected officers and directors as follows: H. G. Bancroft, of Bradford, Pa., president; L. L. Graham, of Oil City, Vice President; A. Dennison, of Bradford, Secretary and Treasurer; Directors: George L. Craft, Warren, Pa.; Lev

Mills, Beaver, Pa.; James H. Duff, Pittsburgh, Pa.; H. J. Slicker, Knox, Pa.; Joseph Fleming, Titusville, Pa.; P. A. Troutman, Waynesburg, Pa.; E. L. Wasson, Butler, Pa.; William J. Healey, Bradford, Pa.; David B. McAlmont, Franklin, Pa.; James P. Eagleson, Washington, Pa.; and R. M. Herman, Indiana, Pa. Executive Committee: P. H. Curry and James H. Duff, Pittsburgh; Earle C. Emory, Bradford, Pa.; and David B. McAlmont, of Oil City.

Pittsburgh. At the Chatham Hotel the women members of the Equitable Employees Association composed of employees of the Philadelphia and allied companies, recently gave themselves a jolly party. A sumptuous banquet was provided followed by an excellent social program. The speaker at the dinner was Miss Mary Russell Furman of the Associated Bureaus and Vice President of the International Quota Club. Music by a girl's orchestra was greatly enjoyed during the course of the evening.

Washington County. In South Strabane township Raughn and Duman have drilled in a good gasser at a test on the H. Garner farm.

The Pure Oil Company has completed a large gasser in its test on the Martin farm near Tunnel Warren township.

TEXAS Breckenridge. It is reported that no less than twenty casinghead plants are operating in this district. Two new plants will shortly be placed in commission, one being the plant of the Central Gas Production Company, the other the plant of the Hurley Gas Company. The former plant will have a capacity of around 10,000 gallons per day, while the capacity of the latter plant will be about 6,000 gallons.

Clay County. The Texas Company upon deepening its No. 12 on the Martin farm, near Petrolia, has developed 12,000,000 cubic feet of gas in a 15 foot sand at 1750 feet.

Dallas. The name of the North Texas Gas Company has been changed to Municipal Gas Company, and its capital stock has been increased from \$500,000 to \$2,000,000. This is one of the distributing companies supplied by the Lone Star Gas Company. Officers of the Municipal Gas Company are: President, C. B. McIntire; Secretary, Treasurer, F. D. McCabe.

Hutchinson County. A good production of gas as well as 20 barrels of oil is the report on the test drilled by H. E. Moore and associates on the Smith Capers ranch in Section 10. Production was expected after the well was shot at a depth of 2700 to 2800 feet.

Itasca. The Lone Star Gas Company has agreed to extend its service to this place, a sufficient number of residents having signed their willingness to become consumers.

Potter County. The Lumberman American Oil Company has completed a 10,000,000 cubic foot gasser on the Martin ranch at a depth of 2405 feet.

Make this: A life while making a living Live one day at a time

Ranger—According to report, the Texas Pacific Coal & Oil Company will construct a natural gasoline plant near Caddo on the Veale lease. It is said that the company expects the cost of the plant to come close to \$100,000.

San Antonio—It is reported that the Hope Engineering Company of Mount Vernon, Ohio, has been awarded a contract by the Grubstake Investment Company for the construction of a pipe line from this city to production in McMullen County, the line to cover a distance of ninety miles.

Weatherford—The property and business of the Consumers Gas & Fuel Company, supplying this city and Mineral Wells have been purchased by D. A. Upland, an oil operator of the latter place.

WEST VIRGINIA—*Calhoun County*—Bickle Brothers have completed their No. 1 well on the Alda D. Hoffman farm in Center district and report a production of 3,300,000 cubic feet.

Charleston—The Gasoline Recovery Corporation announces that its Engineering and Sales Departments have opened offices at 402 Janet Building in this city. The office is in charge of E. M. Burdette, Vice-President and C. L. Voress, General Manager.

Clarksburg—The annual convention of the West Virginia Oil and Natural Gas Association will be held in this city August 24th. Mr. Edwin Robinson is Secretary of the organization.

Clarksburg—A gas well being drilled by the Simmons-Clemans Company on Big Isaac Creek recently caught fire from a lighted cigarette, destroying equipment to the amount of \$4,000. The steel derrick was not destroyed.

Gilmer County—The Philadelphia Gas Company has completed the Lewis Bennett well No. 7347 in Birch district, and reports a production of 134,400 cubic feet.

A production of 1,400,000 cubic feet is estimated from the No. 2 well on the James Bennett farm in DeKalb district. This well was drilled by the Orlando Oil & Gas Company.

Gilmer County—On Bear Fork of Cove Creek, Troy district, the Philadelphia Oil Company has completed a Big Injun sand gasser at No. 3 on H. E. Patton farm.

Harrison County—In Union district, the Gilmer Center Oil Company has now drilled its test on the Abraham Coffindaffer farm into the 50-foot sand and developed a good gas pressure.

Kanawha County—The Owens Bottle Company has completed the R. G. Quarrier No. 1 well in London district. It is a gasser.

Marshall County—In Liberty district, on Hart's run, the Manufacturers Light & Heat Company has drilled a test on the William Gray farm through the Big Injun sand. It is a fair gasser.

Putnam County—The Blackshere Oil & Gas Company completed a good gasser on the tract of the Marmett Coal Mining Company, Bailey Hollow, Poca district. The gas was found at a depth of 1669 feet. The well is estimated good for 4,000,000 cubic feet per day. This com-

pany holds leases on a large block of land and will at once drill additional wells.

Ritchie County—The Mary Nutter No. 1 well of the South Penn Oil Company has been tubed and shut in. A test showed a production of 1,100,000 cubic feet of gas.

On Alum Fork of Bone Creek, the Carnegie Natural Gas Company has a Berea grit gasser at a test on the Roy Bee farm.

Ritchie County—In Grant district, near Penboro, the West Virginia Heat & Light Company's test on the Ritchie County Fair Association grounds has completed a small gasser.

In the same district, in the old Goose Creek pool, David French and others have drilled their test on the Anna Adams farm through the Big Injun sand. It is a gasser good for 2,000,000 cubic feet a day.

In the same district the South Penn Oil Company has a good gasser in the Big Injun sand at a test on the Charles Lowther farm.

Wetzel County—In Center district the Manufacturers' Light & Heat Company has a gasser in the Big Injun sand on the W. T. Knapp farm.

WYOMING—*Greybull*—A pipe line is being constructed by the Midwest-Wyoming Gas Company connecting this city with the Buffalo Basin and Golden Eagle domes. A portion of the line is already completed, this including two 10-inch lines across the Big Horn River and a 14-inch line across the Greybull River. The company has completed a line to its gasoline plant in Salt Creek, and is constructing a 4-inch welded gasoline line between the plant and Casper.

Ravens—The Ohio Oil Company, it is reported, has completed a gasser having a capacity of 40,000,000 cubic feet in section 31-26-87 of the Mahoney Dome.

FIRST AID WORK

A Novel Method of Instruction in Oil Fields

THE personnel of mine-rescue car No. 1 of the U. S. Bureau of Mines recently gave first aid training to various oil companies operating in California, including the Pacific Oil Company at Taft, the Standard, Associated and Universal Oil Companies, and Belridge Oil Company and General Petroleum Corporation at Lost Hills, Calif. Car No. 4 recently spent several weeks in the oil fields of Oklahoma, training being given at West Tulsa, Sapulpa, Tulsa, and Okmulgee. Classes were held and lectures given for oil workers, boy scouts, and high-school students. At Sapulpa the members of the city fire department were also trained in first aid. Car No. 5 has been conducting training for the Standard Oil Company at Wood River, Illinois, where six training classes were formed. Training has recently been given to the employees of the Indian Refining Co. at Lawrenceville, Ill., and to the student sons and daughters of oil workers in that district. Arrangements have been made to give first aid training to more than 1100 employees of this company.

Never credit luck with the sale you make—diligence is the father of luck

CARDS ON THE TABLE

1 R. R. P. BREWER, a member of the National Gasoline Manufacturers' Association, recently in an address said:

"In the few financings that I have undertaken, found that we had to rely more upon the honesty, the integrity and the business acumen of the engineers making researches into the property than almost any other part of the project. Of course, there are four things that are necessary to arrive at favorably before any action can be done: First, the management must be best; second, the parties in control must have ability; third, they must have prop-

erties, the security of which is unquestionable; and fourth, they must have market facilities."

Is it not the case that to establish any line of business, but especially a utility, in general the fundamental points in these words of Mr. Brewer are all important.

THE STRIKE OUTLOOK

UNLESS things are soon settled with the coal-mining interests, it is going to mean the use of larger volume of gas the coming fall and perhaps winter. Are we looking forward with this view in order to decide what provision should be made at the gas-plant to take care of added demand?

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Arrive Buffalo - 7:30 A. M. Arrive Cleveland - 1:00 A. M.

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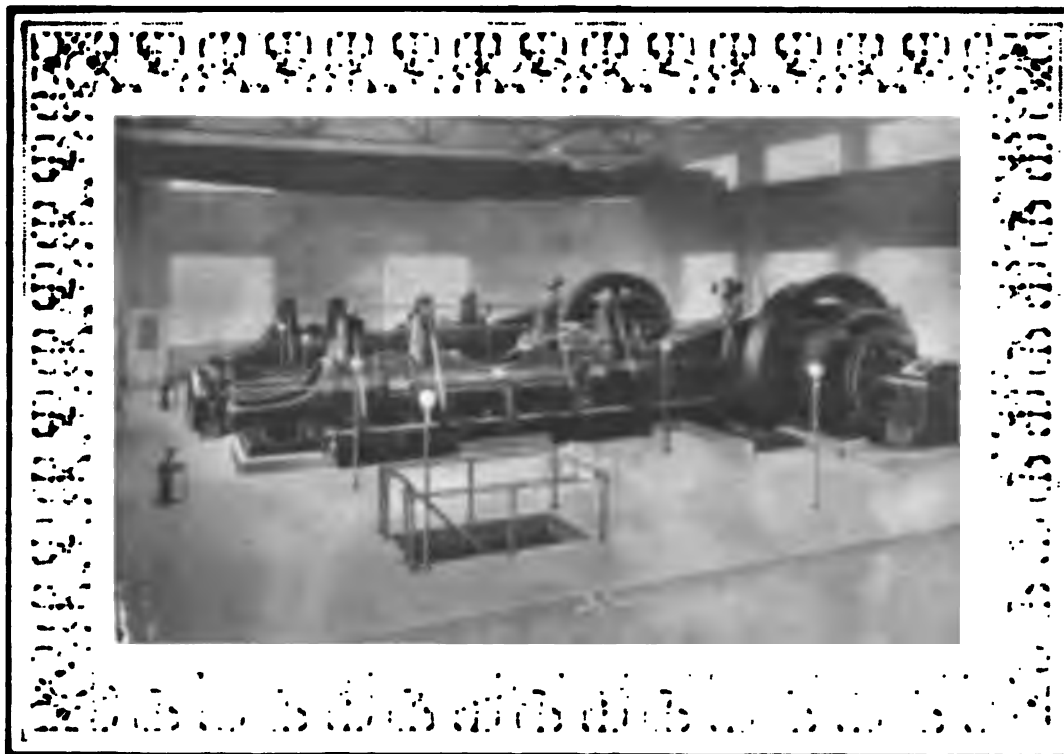
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VOLUME 16
THIS NUMBER 9

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Parkersburg Mach. Co., Parkersburg, W. Va.
Parkersburg Rig & Reel Co., Parkersburg, W. Va.
Peerless Heater Co., Pittsburgh.
Pennsylvania Furnace & Stove Co., Warren, Pa.
Petroleum Publishing Co., Tulsa, Okla.
Petroleum Supply Co., Steubenville, O.
Pittsburgh Meter Co., East Pittsburgh.
Pittsburgh Reinforced Brazing & Mach. Co., Pittsburgh.
Pittsburgh Supply Co., Pittsburgh.
Pittsburgh Valve & Fittings Co., Pittsburgh.
Pittsburgh Valve, F'd'y & Const. Co., Pittsburgh.
Pittsburgh Water Heater Co., Pittsburgh, Pa.
Plymouth Cordage Co., N. Plymouth, Mass.
Pratt & Cady Co., Inc., Hartford, Conn.
Precision Instrument Co., Newark, N. J.
Prichard Supply Co., Mannington, W. Va.

Rathbone, Sard & Co., Aurora, Ill.
Rathbun-Jones Eng. Co., Toledo.
Reid, Jos., Gas Engine Co., Oil City, Pa.
Rensselaer Valve Co., Pittsburgh, Pa.
Reliable Stove Co., Cleveland.
Republic Iron & Steel Co., Youngstown, O.
Republic Rubber Co., Youngstown, Ohio.
Republic Supply Co., Houston, Tex.
Reznor Mfg. Co., Mercer, Pa.
Riesenman Mfg. Co., Ltd., Franklin, Pa.
Robbins Publ. Co., New York.
Robinson Packer Co., Tulsa, Okla.
Roebbing, John A. Sons Co., Trenton, N. J.
Geo. D. Rorer Corp., Rockford, Ill.
Rossendale-Reddaway Belt'g & Hose Co., Newark, N. J.
Rud Mfg. Co., Pittsburgh.

Safety Gas Stove Lock Co., Nashville, Tenn.
Sands Mfg. Co., Cleveland.
Scott Gas Appl. Co., Washington, D. C.
Spang, Chalfant & Co., Pittsburgh.
Sprague Meter Co., Bridgeport, Conn.
Stacey Mfg. Co., Cincinnati.
Stitt Ignition Co., Columbus.
Stokes Deep Well Co., Shreveport, La.
Strause Gas Iron Co., Philadelphia.
Superior Tube Co., Kansas City, Mo.

Taylor, W. P. Co., Buffalo.
Toledo Pipe Thr'd'g Mach. Co., Toledo, O.

Union Rubber & Asbestos Co., Trenton, N. J.
United Seal Co., Columbus.
Upson-Walton Co., Cleveland, O.
U. S. Rubber Co., New York.

Walker & Pratt Mfg. Co., Boston, Mass.
Welsbach Co., Gloucester City, N. J.
Westcott Valve Co., Seneca Falls, N. Y.
Westinghouse Elec. & Mfg. Co., Pittsburgh.
Wheeling Steel Products Co., Wheeling, W. Va.
Williams Tool Co., Erie.
Witman & Co., Columbus.
Williamsoort Wire Rope Co., Williamport, Pa.
Worthington Pump & Mach. Corp., Buffalo.

Yorke Derrick Co., Washington, Pa.
Youngtown Sheet & Tube Co., Youngtown, O.
Young, Wm. T. Drilling Eng. Co., Oil City.

ANNUAL CONVENTION NATURAL GAS ASSOCIATION OF AMERICA
and EXHIBITION OF SUPPLY MEN'S ASSOCIATION
Louisville, Ky., - 1923

FROM THE EDITORIAL MAIL BAG

FRANK FRUEAUFF PASSES AWAY

D beautiful home surroundings in upper Fifth Avenue, after climbing the ladder of business successes, starting in Denver and concluding at 60 Wall Street, New York, Frank W. Frueauff d on to the world of the future.

while yet a boy, by Henry L. Doherty, into the serving the people of Denver, Mr. Frueauff's he began his climbing. His first position was one, but it was the portal to business advance-



FRANK W. FRUEAUFF

is that he fell in with one whose future was on the chart of business achievement and thus lay before him, yet inborn ability, an in- from parents of character and sturdy worth, ndation stone to which his future accomplish- e much.

se days when Henry L. Doherty was getting ld in utilities line, one of the important factors em was dependability in the make-up of those d to serve his interests. This quality he found Frueauff who so many of us grew to call

so his employer and his employer's interests, ng loyalty at times under conditions of great re features in the boy's and later the man's (that caused him to be "the one for the job."

was, however, not the sole trait of him who now finished a remarkable career in utilities.

oil, hydro and financial circles, for within him were the fundamentals of power to plan, to govern and to execute. These were developed under the able tutelage of Henry L. Doherty whose ability to plan and to accomplish is a thing well known from the Pacific to the Atlantic.

Loyalty and ability then were two of the foundation stones, but there remained a third, "Stick-to-a-tive-ness," a trait that so few possess. Always seeing more and greener grass in the employer's field next, always reaching for the berries that are on other bushes, not observing the thorns there, as well as on the bush at hand, though this one also bears berries awaiting the hand of the picker, was not a trait in the make-up of Frank Frueauff. He "stuck," as the expression goes, and as opportunity presented he *bought-in* and stayed-in, with the result that when he passed into the beyond he had become represented as an officer or director in 144 companies and among these, a chief officer of the Denver Gas and Electric Company, the concern he started with as a boy.

During years past, my touch with Mr. Frueauff assumed the phase of the personal. He became vice-president of the National Commercial Gas-Association which in turn became the largest gas-association in the world, and that I have the honor of having founded. Then later, while I was yet its secretary and treasurer, he was elected president.

It was at a convention presided over by him as president, that the association presented me with a beautiful repeater-watch, chain and gold pencil, as its founder, a gift most highly prized and naturally still possessed.

When the "N. C. G. A." purposed holding the biggest commercial gas show ever held in the biggest city, in the greatest country in the world and in the country's largest and most famous show-house, Madison Square Garden, in New York City, it was Frank W. Frueauff and the writer who together signed the lease, both making ourselves personally liable in the interests of the National Commercial Gas Association and because of our deep personal interest and belief in the commercial side of gas industry in the United States, to the extent of \$9,000.00 for the use of the "Garden" for one week, we trusting in the ability of the association to "make-good," which it did.

Thus, as I have written, my personal touch with Mr. Frueauff was such that what I have said of him is said of one I knew.

When president of the N. C. G. A., it was Mr. Frueauff who came to me and out of a clear sky said, "Don't you want your magazine 'The Gas Industry,' (then entitled 'Light') to become, and be made by the association its official organ; the association will gladly do it in justice to you for your work in behalf of it and the industry at large, if you desire it." My reply was, "No;

good is noble, but to teach others how to be good is nobler—and less trouble—Mark Twain.

all magazines, I desire, should be treated alike in this field, and I would prefer to have mine independent and not an 'organ.'"

I cite the foregoing simply to further show that Mr. Frueauff possessed those same qualities that his chief, and later his partner and associate, Henry L. Doherty, possessed, namely, the right of recognition, and desire to serve those who have in turn sought to and have served the interests of his field and in turn along with the interests of others, the interests of his company.

Mr. Frueauff was the executive head of Henry L. Doherty enterprises and passed on at the early age of forty-eight years. At the time of his death, Mr. Frueauff was in some circles principally known as vice-president and a director in the widely recognized "Cities Service Company," through which a large percentage of the Doherty interests are controlled.

Seldom externally ruffled, meeting men affably and in a thoroughly informal manner, listening to thousands of proposals, suggestions and arguments and deciding promptly and with a purpose to decide upon merit, were characteristics that helped to make him the efficient man that he was.

It is indeed with deep sorrow that we write of the death of this man of affairs, this personal friend.

Our portrait is of Mr. Frueauff when president of the N. C. G. A.

Lucius S. Bigelow.

POSITIONS WANTED

WE have been asked the question, "Will you print 'positions wanted' advertising items without cost, in view of the fact that when searching for a position the advertiser is frequently for the time-being without earning capacity?" We desire to make the following statement: For subscribers to the *GAS INDUSTRY Magazine*, we shall be exceedingly glad to render gratuitous service in an attempt to locate a position.

Taking it for granted that all of our readers are worthwhile men, and that employers would find it to their advantage to employ only such, we should like exceedingly well to be a means of bringing the employe and the employer together for mutual benefit. Therefore, our answer to the question, "Will you print 'Positions Wanted' advertisements for subscribers, without charge?" we say, "Yes, emphatically yes," adding, "if you are not a subscriber, become one, and use our free advertising space, as above noted, to your advantage."

FROM WASHINGTON TO THE COAST

A line from the coast while telling of coast matters in general, says that the Scott Gas Appliance Company (Washington, D. C.), product is fast becoming a factor in the gas range field on the Pacific Coast. The concern is represented through established offices at Los Angeles (main Coast office) under the Sales Man-

agership of Will W. Barnes, and a branch office at the Furniture Exchange in San Francisco.

In the short time they have been located on the coast, agencies have been established with the most prominent firms supplying high grade appliances. This proves the wise selection made by Will Barnes who is putting this product across out there.

Not content to use ordinary selling methods, Will, it is said, has seen to it that where proof of the performance was necessary he has taken the range right with him. Thus, upon giving a practical demonstration, he has won the confidence of the trade. He is ably assisted in the southern end of California by Fred C. Shepard, as we recently stated, for many years Superintendent of the Minneapolis Gas Light Company and L. Moblo, Vice-President of the United States Register Company of Battle Creek, Mich., and Charles Moblo, while in San Francisco A. P. Bartley well and favorably known in the gas appliance field is helping in the establishment of the Scott Range in the Northern territory.

"Watch Scott Grow" is said to be the slogan of this organization.

DEATH OF CHARLES GRAY COOPER.

Mr. Charles Gray Cooper, for forty-five years identified with The C. & G. Cooper Company, Engine Builders, Mt. Vernon, Ohio, died at his home in Mt. Vernon at 5:00 A. M., August 4th, 1922, after an illness dating from April, 1918.

He was born in Mt. Vernon December 11th, 1845, and was the son of Elias Cooper, who, with his brother, Charles Cooper, founded The C. & G. Cooper Company ninety years ago. He was educated in the Public Schools of Mt. Vernon and at Oberlin College.

Mr. Cooper, as a young man, served in the Civil War. He became connected with the Cooper Company in 1866, at which time it was a partnership. Later on, at its incorporation in 1898, he became Secretary and served in this capacity until the death of the President, Mr. F. L. Fairchild, in 1912, when he was made President. He served as President until his illness in 1918, when Mr. B. B. Williams was made President and Mr. Cooper became Chairman of the Board of Directors, which, as an honorary title, he held until his death.

Mr. Cooper was one of the Pioneer Engine Builders of this country and practically his entire life was spent in the developing and building of Cooper Steam and Gas Engines.

He was a member of the Masonic bodies of Mt. Vernon and for many years an officer of the Congregational Church. His activities were numerous and he was held in high esteem by all who knew him.

Two members of his immediate family who survive him are a widow, two daughters and a son.

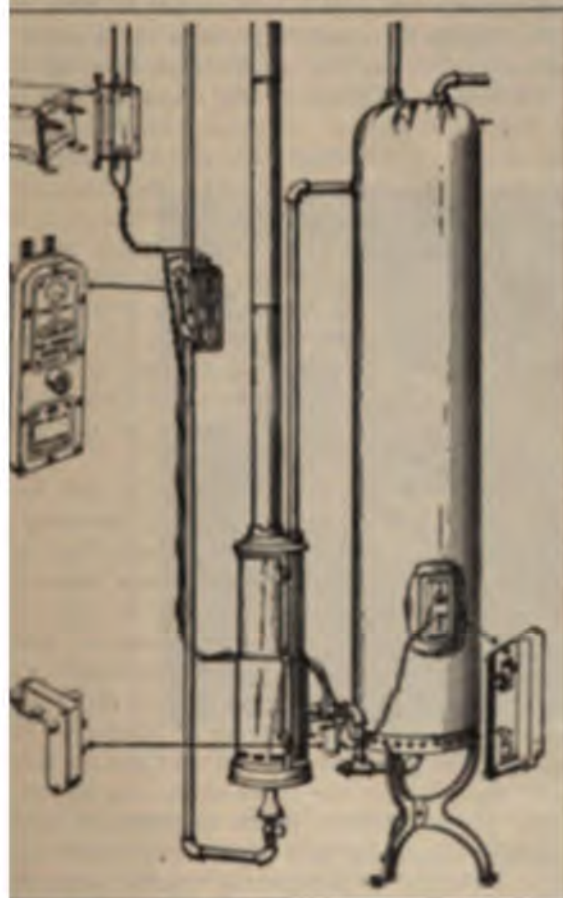
The industry has lost another of its representative men in the death of Mr. Cooper.

Good will, like a good name, is got through many actions and may be lost by one

MATIC WATER-HEATER REGULATION

ERE are thousands upon thousands of tank water heaters in service attached to boilers in kitchens and basements throughout the United States. These same thousands upon thousands are non-automatic, and must be in advance of service, an especially inconvenient when down in the basement.

Replogle, former assistant director of re- of the General Motors Corporation, is the one able for the devising and perfecting of an ap- electrically controlled that converts the tank water installation into a device automatically ed whereby the drawing of water from a



FAITHFUL TANK WATER HEATER REGULATOR

will ignite the burner which will be turned off tically when the water has reached a prede- d temperature.

t is supplied is the apparatus all ready to at- The gas-valve is placed in the gas supply pipe ly cutting out a short piece of the pipe and ng the two ends that then enter the valve.

e is a small transformer that transforms the lumninating current down to a current appro- for service in operating the gas valve. The est is a very simple arrangement that is as a patch against the boiler and there fastened de fashion to hold it in place inside of an in- jacket that is supplied with the appliance.

GOOD NEWS TO TRAVELERS

A very great effort has been put forth to accomplish interchangeable mileage books or interchangeable scrip books good on all railroads, with a notable saving in rate, and thus providing both lower rates and an exceedingly convenient means of travel where one is using various railroads.

An interchangeable mileage bill was passed by congress and the senate recently. This directs the interstate commerce commission to require the issuance of either interchangeable mileage books or interchangeable script books as the commission may think desirable. This has been a long fight, but the fight has been won. It is a fight in which the Traveling Salesmen's Associations of the United States have taken a decided hand.

Heretofore a traveler carrying mileage books and traveling on various roads was obliged to carry a number of these books, as they were not interchangeable, while under the new act, one book will cover the entire situation.

It is expected that the books will be offered for sale at a substantial discount. It is quite possible that a book containing \$100 in scrip may be sold for \$75.

Without the persistent and energetic endeavors of the National Council of Traveling Salesmen's Associations, assisted by other organizations, sales managers and employers of large staffs of traveling men, this favorable legislation might not have been enacted. It is certain that the opposition to it would have postponed action.

Further important legislative and organization measures will be formulated at a convention to be held by the National Council of Traveling Salesmen at Cincinnati on October 9th, 10th and 11th. It is expected that the greatest and largest gathering of commercial travelers, ever assembled, will be present at the convention at which time they will plan for the future, the best interests of business in general, and the traveler in particular.

SOME WELL KNOWN MISTAKES

When a doctor makes a mistake he buries it.

When the plumber makes a mistake he charges twice for it.

When a lawyer makes a mistake it is just what he wanted, because he has a chance to try the case all over again.

When a carpenter makes a mistake it's just what he expected.

When a judge makes a mistake it becomes the law of the land.

When a preacher makes a mistake nobody knows the difference.

But when an editor makes a mistake—Good night!

Tomorrow: The day when idle men work and fools reform. — Nuggets

\$5,000,000 DAILY Such the Current Strikes Cost Workers

WHAT do strikes cost? The Industrial Digest makes an attempt in its July 22 issue to estimate the loss to the nation which is occasioned by industrial warfare.

"A statistician of the National Industrial Conference Board has computed that American workmen now on strike are losing something like \$5,000,000 a day in wages," says the magazine. "The loss to other workmen, not strikers, who have been thrown out of their jobs because of the strike, is probably just as large, but no data is at hand from which to compute it.

"About 1,250,000 men are now out on strike. Roughly, 80,000 of them are textile workers who have been out since the early months of 1922; 155,000 are anthracite coal miners who have been out since April 1; 573,000 are bituminous coal miners who have also been on strike since April 1; 400,000 are railway shop workers who have been out since July 1; and the balance are an assorted lot of building trade workers, clothing workers, etc. One is safe in assuming at any time, year in and year out, that about 20,000 workers in the clothing and garment trades are on strike. Sometimes they are boys' pants makers, sometimes dress workers, sometimes cap makers, sometimes millinery workers, and sometimes another kind of needleworkers; but some of them are always out because of a quarrel with the employers.

"Assuming an eight-hour day, these 1,250,000 strikers represent a loss of labor amounting to 10,000,000 man-hours every day. It would take 100 men working continuously for 300 days a year, five years to offset a single day's loss at this rate. Do strikes pay the strikers?

CUSTOMER OWNERSHIP

A Lively Contest at Louisville

SECURING 112 new preferred shareholders for the Louisville Gas & Electric Company during the month of June is the remarkable record established by Isador Dreyfus, securities salesman in the Investment Department of H. M. Byllesby Company. A special campaign has been on under the direction of Investment Manager Robert Montgomery. Mr. Dreyfus received as an award of merit, a gold watch offered to the salesman making the largest volume of sales during the month. He sold a total of \$49,800 par value preferred stock to 141 different people, 112 of whom had never before purchased the shares of the company. Some idea of the amount of work necessary to close this number of sales may be gathered from Mr. Dreyfus' report that he made an average of fifteen calls each day during the period of the contest.

As a direct result of the campaign, 334 sales were made by the six salesmen in the department, covering 1,460 shares of stock; 197 new shareholders were added to the rapidly growing list of customers who regularly receive dividends from their holdings of the Company's shares.

These figures do not include office sales made during the period, which swell the total sales to \$185,500.

The other salesmen participating in the contest, all of whom made excellent records, were Messrs. Young, Nutter, Dupree, Reid and Boyd.

ROCKY MOUNTAIN PETROLEUM ASSOCIATION

A REPORT on the operations of the Rocky Mountain Petroleum Association, in co-operation with the United States Bureau of Mines, dealing with drilling and producing operations in the oil fields of Wyoming, has just been issued by the Association.

The Rocky Mountain Petroleum Association was organized in 1919 as the result of an investigation made by the Bureau of Mines of the operation of oil wells in the Salt Creek field in Wyoming, which indicated probable means of reducing underground waste and other sources of oil losses in that field. The Association comprised three of the large companies—the Mid-West Refining Company, the Ohio Oil Company, and the Continental Oil Company. The sum of \$30,000 per year was subscribed by the Association, to be expended under the direction of the Bureau of Mines for the purpose of determining the best method for the conservation of petroleum and natural gas in the Salt Creek field. F. B. Tough acted as engineer in charge of the work, with headquarters in Denver, Colo.

It is believed that the work done by the Association resulted in a general improvement in operating methods throughout the Rocky Mountain district. Four jobs alone, conducted by the Bureau of Mines men under the Association agreement, effected a saving of \$307,000 in the way of increased oil recovery, saving of drilling expenses, and the demonstration of preventable losses. In March, 1921, after the appropriation by Congress of funds to be used by the Bureau of Mines for the supervision of the production of oil and gas on Government lands, the work of the Association was discontinued.

The present report, which emphasizes methods of mudding, cementing and repair work that have been found effective in overcoming troubles encountered in drilling operations throughout the State of Wyoming, covers 92 pages of text and contains ten tables of useful information and 24 illustrations or maps. Working drawings of various devices used in oil well work are included. The report contains a map of part of the Lance Creek field, a map of Mule Creek field on a scale of 1 inch to 400 feet, and a map of the Salt Creek field on a scale of 3 inches to a mile.

The report, which is issued in mimeographed form, is on sale at the offices of the Association at 206 Customhouse, Denver, Colo., and 508 Consolidated Royalty Building, Casper, Wyoming, at a price of one dollar per copy postpaid. Payment may be made in cash, money order, or check, payable to the Engineer in charge, Rocky Mountain Petroleum Association.

It is better to be able to look back to a day well lived than ahead to a month of promises—The Lamp

TEACHING GAS-GIRLS TO COOK

RECENTLY the leaflet issued by the Peoples Gas Light & Coke Company, Chicago, told about how the female employees of that vast institution are being taught to cook, in order that they may be acquainted with those things which pertain to the use of gas and that gas companies are very generally now trying to teach the public.

The statement in the leaflet is as follows:

When a man marries he is presumed to know how to do everything that will bring in enough money to support his family. In almost every case he does know. But there are many cases in which the girl does not know how to do even the simplest of meals. Of course in many cases the girl can hardly be blamed for this unfortunate state of affairs; she may never have had a chance to

HIGH GAS BILLS

ANOTHER service has been rendered to the gas industry of the country by the appliance interests. In this instance it has been accomplished through an article written by Mr. Fred K. Wells, who for years has been connected with the appliance business, and who is now at the head of the Pittsburg Water Heater Company's representation at Boston. The following article appeared recently in the Boston "Sunday Post." It's good propaganda, and especially so in view of its truth-telling qualities. The article read as follows:

"We hear a great deal about high gas bills where an automatic gas water heater is in use, but the fault (if there is any) is not that the automatic water heater is to blame for it, but that the users are not justified in their criticisms, because they do not stop to think about what it cost them to get hot water service in any



GAS COMPANY GIRLS LEARN HOW TO COOK

the gas company offered to extend the benefits of the Service Department to those of its women and employees who wished to take advantage of it, one hundred and twenty-five of them promptly responded.

Classes are held every Thursday, after business hours from 5:15 to 6:15—and they are extremely popular. The instinct to cook is inherent in most women, but circumstances sometimes reduce this instinct to a suppressed desire. Married women as well as unmarried are keen on the cookery instructions. A woman asked old Dr. Johnson what she should do to keep herself happy. "Feed the brute," answered the old doctor.

Of course there are other avenues in which to express one's excellence besides the one suggested by him, but for the most part there is an almost universal desire among the female of the species to learn how to cook.

other way. They buy several tons of coal during the cold season to last until spring, and having no meter on the coal pile they are unable to determine what any part of its use is costing them.

It is fair to assume that such hot water service as they get requires at least one-half ton of coal per month, which is approximately equivalent to one bushel of coal per day at a cost of about \$8 per month at present prices.

Now an always ready supply of hot water is taken advantage of by all the family frequently. Hot water is used when cold water would do as well for the purpose, but they like the comfort of hot water, and therefore use it more frequently, because it is always there ready for use. Naturally, this adds to the gas consumption, for there is no expense while the water is not being drawn except for the pilot light, which

Believe this! The best opportunities are of the home-made variety.

consumes but little gas, and even the heat from the pilot flame goes into the water in the coil, therefore it is not wasted.

Hot water service from a coal range is intermittent unless the coal fire is kept burning, and there is none to be had in the morning until after the coal range is started and run for a long time. Hot water service from an automatic gas water heater is continuous—the heater is always ready when hot water is wanted, be it a cupful, or one or more baths, as it will deliver clean, pure, hot water just as long as the faucet is open.

Is the comfort and luxury of such service worth having, or isn't it? If it is, then the question of the cost of it is secondary, but in comparing the cost of the gas with coal one is apt to overlook the fact that day time hot water service alone with coal would cost the price of half a ton, or about \$8 per month, while 24-hour service with gas, while apparently costing more, should be given credit for the cost of the coal which is not being used, but that is overlooked. One thousand feet of gas per month per person should be sufficient for any family.

Looking at the subject from a sensible, as well as an analytical standpoint, the arguments seem to be all against the critics of so-called high gas bills, and in favor of the greatest comfort producing device of modern times, particularly for the bath if for nothing else, but like the original "idea" of the bath itself, it has to fight its way, and not half the people take the baths they should, yet the hot bath is worth more to our well being than any tonic put up in bottles at \$1.00 per, or six for \$5.00.

Knocking gas companies is a very popular indoor sport these days, yet most people would prefer to see their gas bills large rather than do without gas, for they surely do appreciate the cleanliness and convenience of the gas service. So think of that feature—you self-appointed critics, and hark back to the days of the Saturday night bath—which was all that any of us got, and that wasn't so very long ago,—stop and think! Is there anything you need in your home so much as hot water? Morning, noon and night you must have it, a score or more times, each day for bathing, for shaving, cleaning, dish-washing, laundering, and similar uses. The automatic gas water heater provides all you want.

No fuss—No waiting—No carrying. How about it? Isn't it worth it?"

GAS RANGE SPECIFICATIONS

THE following changes are recommended by the Committee on Standardization of the A. G. A., as applied to gas range construction, those having copies of the specifications, whether they be manufacturers of ranges or buyers of ranges should observe the recommendations which here follow:

On Page 4, Clause 2—"Sheet Metal" change title to read "Sheet Iron" and change "Sheet Metal" to read "Sheet Iron" on line No. 1.

On Page 5, Clause 7—"Oven Linings" on lines 4 and 5—remove the words "both insulations and" and increase the space required from $\frac{1}{4}$ -inch to $\frac{1}{2}$ -inch." This sentence will now read as follows:

"Where the back space is used for flue purposes there is to be not less than $\frac{1}{2}$ -inch space."

On Page 7, Clause 8—The title should read—"Burner Box and Burner Box Lining," instead of "Burner Box and Burner."

On Page 8, Clause 14—Take out the following sentence—"Back oven doors either to be insulated or when made of cast iron to have a smooth inside surface coated with aluminum paint or some equally satisfactory heat resisting coating."

On Page 10, Clause 25—Air Shutters—Take out the entire clause and substitute new clause as follows:

"Shutters of all burners to be capable of any desired adjustment and so constructed that the position can be rigidly fixed to prevent slipping."

"It should not be necessary to completely remove the bolts when shifting the shutters from one adjustment to another."

"Lock washers, when used, should have a firm bearing on the shutters. The side bolts preferably working in slots so that the lock washers shall bear against the shutters on both sides of the slot."

"Shutters to be of substantially cast or malleable iron of not less than No. 20 gauge sheet steel, and if of sheet steel the edge to be turned over. Shutters for top burners and sheet steel shutters for oven burners to be coated with a non-corrosive metal or finish."

"Shutters must make a close fit with mixer faces and when closed fully there are to be no uncovered openings."

Page 12, Clause 27—Manifolds—Add the following new paragraph:

"Cast manifolds are acceptable, but when used they should have a cross sectional area at least equal to that of $\frac{3}{4}$ -inch pipe and they should be made of good grey iron."

In the drawing of the standard gas range cock, there should be added under note:

"A thin fibre or similar washer must be placed between the small end of the porcelain handle and the metal seat of the plug."

SERVICE CHARGE

IN a recent declaration the Bureau of Information connected with the Public Utilities Service in Missouri set forth that where a service charge is not made, the equivalent amount must be covered in a flat rate charge for gas itself, thus making the gas bill, that is, the bill for actual gas, more than it should be. The statement is made that the charge for service should be an entirely separate matter, as of a truth it is, and item of such charge should appear entirely by itself

Luck means the constant and complete use of your own resources

and as applied to itself, and in no way interwoven with the charge for the commodity.

The Bureau said: "Few people understand what the gas service charge is," says the report. "It is a special charge designed to cover cost of installing, repairing pipes between main on street and premises of customer, installing, replacing, reading and repairing meter and service pipes, keeping accounts, rendering bills, etc. The service charge is entirely independent of the amount of gas used and of the general operating and maintenance expense of the gas plant and business.

"The principal point made by the gas companies for the service charge is:

"By compelling every customer to pay separate charges for service, the service charge will reduce gas bills of the average workingman, clerk, householder, etc., and enable the gas company to sell gas at a less rate per 1000 feet, which will help the gas company by popularizing gas and by enabling it to sell much greater quantity of gas itself.

"In the end, service charge or no service charge, the gas company must, perforce, collect practically the same amount of money as it will collect with the service charge in force. So the gas companies are not interested in the service charge as an additional source of revenue.

"The gas companies figure that it costs them about 75 cents a month to carry each customer on their books, irrespective of amount of gas used. He may not use any gas at all or he may use 10,000 feet; the cost of carrying him is the same.

"When a dweller in a high-rent apartment or in an office uses only 400 feet of gas at a total bill of, say, 60 cents, that customer's monthly bill falls short of meeting the cost of serving him by 15 cents. The company loses 15 cents in service and 60 cents' worth of gas, a total of 75 cents a month, in serving such a customer."

Such matter broadcasted by the Utilities' Information Bureau is well worth while. It should materially help companies in explaining to their customers what a service charge is and what it stands for, and why it is instituted. The way of the gas-man in Missouri should be made easier through these explanations made by the Bureau to the public.

CUSTOMER OWNERSHIP

THE following is taken from an address before the Iowa Electric Association, by E. E. Sanford, Manager of the Securities Department of the St. Paul Division of the Northern States Power Company. Although this address was delivered before an electric association, there is so much in common in both the electric and gas fields, as applied to this matter of "Customer Ownership," that we feel that the following will prove of interest to our readers:

CUSTOMER OWNERSHIP

"Let us suppose that in your locality you know every man, woman and child, and know them well enough to call them by their first names and could talk to them

intimately and explain in person any grievances that might come up in the course of business. It isn't likely that you would have any trouble in getting a fair deal. Customer Ownership is like that. It doesn't reach everyone in the community, but when there are several thousand stockholders in a community nearly everyone has some friend or relative who is a stockholder and when he thinks of the interests of the public utility company he thinks also of the interests of that friend or relative.

"A week or so ago one of our department managers in St. Paul had occasion to send a letter to his father in a hurry. He took the letter to the train himself to insure proper mailing only to find that the mail car conductor could only accept mail in pouches. As he was turning away disappointed, the conductor noticed that the envelope was a Company envelope. 'Just a minute,' he said, 'I am a shareholder in that Company and I am going to look out for its interests wherever I can. I'll take the letter myself and see that it is dropped off the train at the right place and mailed from there.' It is that attitude which Customer Ownership creates which is more valuable in many ways than the direct financing.

"The worst enemy which we have to fight in this world is the curse of ignorance and the desire among people totally ignorant of affairs to run them. Witness Russia. Given the facts, however, ordinary intelligence finds the right solution. Customer Ownership turns the light of full publicity upon the company undertaking it. It brings the business right out in the street and invites everyone to watch the wheels go round. It brings people on inspection tours into your power plants.

"In this way it ought to insure a square deal for the companies carrying on such work, but it also entails a greater burden on the companies, in that the shareholders more closely scrutinize service and policies. In creating a large body of shareholders you are also creating a large body of bosses.

"I spoke a few moments ago about the effect on public relations if you could call all your customers by their first names, and stated that Customer Ownership accomplished just that. Now, just a word of warning. Don't hurry into a campaign without scrutinizing the security offered from every angle. Just think how your friends would feel if you handed them a gold brick. Handling the money of small investors requires the utmost care and you ought to know what your security will do in times of depression before it is broadcasted. If it cannot pay dividends good years and had the effect of such a campaign would be in the shape of retribution rather than good will.

"And now let me tell you about the easiest sale I ever made. I was sitting in my office when an old German lady came in. Wishing to impress her with my politeness, I got up and with my best manner asked, 'Madam, won't you have a chair?' 'Ja,' she replied, 'I take fourteen,' and I wrote out her subscription for fourteen shares."

Greatness does not consist in never failing, but in rising every time you fall—Confucius

BARREL MANUFACTURE

FOR many years barrels have been required for a vast number of purposes, some liquid-tight, others merely for the carrying of sugar, salt, produce, etc.

Possibly the producing of "liquid-tight" barrels has fallen off to no small extent on account of such content not being transported in barrels in so large measure as heretofore.

In manufacturing barrels used for transporting sugar, salt, vegetables, produce, etc., it is necessary to have the staves pliable during the formative period, and this

It has been found that gas-heated kilns made in the form of large metal drums perform the work rapidly and satisfactorily, and that where barrels are dried by gas-heat, and in the manner illustrated, there is an absence of strain upon the hoops that is much to be desired.

There is nothing notably expensive about an installation of this nature, and in cities where barrels are manufactured, the gas company should advise itself regarding details, and then submit plans to barrel manufacturers, thus increasing the output of the gas company's product.

Our illustrations are of the drying department in a very extensive barrel manufactory in Chicago. These



A CORNER OF ONE OF THE LARGEST COOPERAGE PLANTS IN THE U. S.

is accomplished through moisture which must be dried out after the shaping process, and barrel-assembling have been accomplished.

Of course, were the staves not to retain their new shape and form, they would present great resistance in their attempt to reassume their original shape, therefore the purpose when the staves have been formed, and the barrel has been assembled, to dry the barrel in its assembled form, and the staves in their molded shapes.

were very kindly loaned us by the People's Gas Light & Coke Company of Chicago, who have achieved this type of gas-outgo through its excellently well conducted Industrial Gas Department, which is under the supervision of F. F. Cauley, who is not only known to his company, but to the gas interests throughout the country as one of the best advised industrial gas engineers in the industry. Mr. Cauley's Industrial Department is constantly working on large projects, and has installed

Act on this: It is cheaper to keep well than to get well.



VIEW OF GAS OPERATED COOPERAGE PLANT

nts of one sort or another devised by his de-
although wherever possible industrial appli-
suggested to users, that are obtainable from
ar manufacturers of the field.

SMILES

-Saturday night from an automobile between
Cedar Rapids, black bag containing silk night-
shirt, silk stockings, and three dozen eggs.
st: The "chickens" were probably on their
to roost.

—Cedar Rapids Gazette.

ED—Pleasant room in private family or room-
by a young business woman with comfortable
ctly confidential.

nt: Some Y. B. W. I know are absolutely

—Quincy, Ill., Herald.

saat, Served in Your Favorite Fountain Drink.

nt: Taking a rise out of the eighteenth amend-

—Ad in San Diego, Cal., Union.

ention of the "Bungalow Dance" to be given
the K. of P. hall, yesterday's Record stated
costume requirements would be bungalow aprons
dies, which is correct, and the gentlemen should
overalls, which was an error. Gentlemen will
shirts, and leave the overalls at home.

nt: Aren't we having beautiful sunsets lately?

—Roodhouse, Ill., Record.

har accident is reported from Abbotsford. Fred
e, a young man of that place, slipped and fell
ing alley, striking the side of his head against
r of an electric piano. No one saw the acci-

dent, but a few seconds later someone noticed that one
of his ears was gone. It was the first he had heard
about it, but sure enough upon making an investigation
he found he was minus an ear. The lost member was
found lying on the floor near the piano and with its
owner was taken to Doctor Johnson's office, where it was
put back in place, and is growing on again.

Comment: Some ear for music.

—Rice Lake, Wis., Chronotype.

Only 24 pupils. All sports.

Comment: Let me see, what railroad is Elmhurst on?

—Ad of Elmhurst School for Girls, Indiana.

To Whom it May Concern: The stories that John
Hartness is telling around are false—that George Hart-
ness is beating him is not so. The trouble was John
Hartness put a bucket on my stove. It had ice and
snow on it, and a hole in it. I told him to take it off,
it would break the stove covers. He would not, and
George Hartness came from the other room and told
him to take it off that it was leaking but he wouldn't.
So George went to take it off and John Hartness struck
him with the bucket and then came for him. George
Hartness took him down and held him down and asked
him if he would behave himself.

Mrs. L. M. J. Hartness.

Comment: Then they both got mad and commenced
to fight.

—Hopkinton, Iowa, Leader.

LOST—Monday, between Trinity Church and
Twentieth and Sherman streets, a Filipino embroidered
chemise. Please phone York 2577.

Comment: A mere "slip," probably.

—Denver News.

A furniture advertisement rebukes the movie industry
and the theatre in general for its wonderful displays of
fingering in the following headline:

"Sleeping Rooms Are Intended as a Place of Rest."

1922 Will Be An Electrical Year.

—Ad in Dallas, Texas, Mirror.

Comment: Shooting stars, in Los Angeles, stray
comets in the sky or just a tip to lightning rod agents?

WANTED—Two girls in our stripping department.
Good wages.

Comment: That's all right; they are cigar manufac-
turers.

—Ogdensburg, N. Y., Daily News.

WHY INDEED?

It takes 65 muscles of the face to make a frown and
13 to produce a smile. Why waste energy?

Remember a shoestring may some day tie a bow knot in a bankroll.

Desired Condition

Will Gas-Interests be Able to Take Any Class of Business in Any Volume, at Any Time?

The following is in part an address of Oscar H. Fogg, Secretary-Manager of American Gas Association before the Gas-Sales Association of New England.—Editor's note.

EVERY man who has fixed his eyes on the future of the gas business has tried to visualize the time when we could say: "Yes, we're ready to take any class of business, in any volume, at any time. That's what we're here for." We dream that dream and hope for its realization and we know that until we begin to approach it as a reality, ours is a weak position from the strictly commercial standpoint of business development.

"The uniform maximum load is our goal, but there are many obstacles in the way and I believe the time has come to devote ourselves more energetically to their removal. Don't let me seem to convey the impression that there has been nothing done. One of the most valuable steps so far undertaken was that made by Mr. William Gould, now the vice-chairman of our Commercial Section. As chairman of the Committee on Filling in the Valleys of Gas and Appliance Sales two years ago, he presented a clear analysis of this situation and suggested remedies, and it is one of the activities developing from that study that I shall refer to particularly a little later on.

"I believe it is not unduly critical to say—and I say it of no one section, but of the gas business throughout the country generally—that in the devotion of our sales effort to the established proven fields, we have given too little time, to the effort to create those fields which might be made to build up the low spots in the yearly curve."

At this point, Col. Fogg made a statement that should not be lightly considered. Instead, to follow the suggestion would mean a wonderful achievement in gas commercialism. The Colonel said:

"We don't want to cut off the peaks and use those to fill in the valleys. *We want to find new material for filling-in so that the valleys may be brought up to the peaks,* and it was to that end that the work of Mr. Gould's committee was directed. Like all people in business, we want to operate all the time at maximum capacity and not on a part time schedule.

"In some cases we find extensive house heating business being turned away or limits put upon the volume of that class of business to be accepted, because it threatens to impose an excessive demand upon the plant

for only a fractional part of the year and if not held in check, it might readily necessitate extensions of plant calling for additional capital expenditure and increased fixed charges, only to have that part of the plant idle for half to three-quarters of the year, depending on the climatic conditions and the length of the heating season. For the three or four months that such business brought us revenue, there would be nine months or so in which the old hill-horse of fixed charges would have to be fed at a loss, for our hill-horse is made of iron and steel, of real estate and permanent structures. He can't be sold or shifted from job to job. Working or idle, he stays right there. He has to have his oats and he can eat in nine months more than he earns in three. So the problem is, to find work for his idle time, to try to work him at a uniform rate throughout the twelve months of the year.

"We think that a real step has been taken in this direction in the campaign now under way, which concentrates upon the intensive development of the use of gas for water heating. There appear nearly six million prospects to whom water heating equipment can be sold, and while some of them would be all the year round business, it is probable that many would be chiefly spring and summer load. It is not to undervalue the domestic use of gas for water heating that I particularly point out the large volume user, the hotels, apartment houses, clubs, office buildings and commercial and industrial establishments, whose boiler plants, when spring comes, often have no other duty than to operate at reduced capacity to furnish hot water service and can, in many cases, be economically shut down for the spring and summer period and the hot water demand supplied by gas equipment. For those interested in developing large volume storage water heating for either seasonal or yearly usage I believe the article in the May issue of the A. G. A. Monthly will be of considerable value. In this article Mr. N. T. Sellman, one of the Association's service engineers, has made the subject of estimating hot water requirements and the selecting of the correct heater and tank sizes an accurate study, and it should eliminate considerable of the uncertainty which this subject has always involved.

"Where the gas company has a heavy winter load and doesn't dare risk the added peak that any extensive house-heating business would build up, intensive water heating development is a most attractive prospect and it is not inconceivable that this and other classes of spring and summer demand could be so developed as

It's the ability a man uses, not the ability he possesses, that regulates his reward

to not only fill in that valley, but actually surpass the winter peak and so, possibly, justify a more receptive attitude toward house-heating business. But meat for one man may be another man's poison. There will be sections of the country or localities with specialized classes of demand which are unlike others and the characteristics of the load curve will vary accordingly. So no rule can be set, nor can one class of demand invariably be regarded as solving the problem of the uniform load. It is a subject which requires study and analysis in every instance, and I believe that it is not altogether a theoretical proposition to say that it should be the first duty of the sales manager to make a most careful and accurate analysis of the peaks and valleys of his sales of gas and then endeavor to develop the sales of gas-using equipment accordingly.

"We will not be upon a sound commercial footing until sales departments are permanent and stable, plugging ahead at full strength twelve months in the year and analyzing and minutely studying the field for the purpose of discovering every potential demand that may exist and intensively developing those demands that may help to solve the problem of the variable load.

"We believe that the enthusiasm with which the water heating drive idea is being taken up in all sections of the country will result in proving beyond all possibility of doubt the advantages of such specialized effort and its effect upon the seasonal load, and we believe, too, that the attempt to do the thing in a practical way and on a large scale will, in its practical results, stimulate other effort and suggest new directions in which to find work for the hill-horse.

"In one instance of which I have recently heard, where the normal summer load was relatively low, a thorough canvass of the possibilities disclosed the fact that had not until then been known, that there were several large industries whose fuel-using operations came to a peak in the summer time and fell relatively low in the winter months. Their load, in other words, was just the opposite of the gas companies' and the value of that consumption converted from solid fuel to gas, had never been suspected until the curve of gas sales had been produced and analyzed and a study made of the classes of manufacturing work which was done in the community and the possibility of their seasonal demand thoroughly gone into.

"Rule of thumb selling is passing on. The men to whom the gas industry looks for sales will have to study the market thoroughly and probe deep into the possibilities, and you gentlemen must be gratified that here in your section of the country there has been so much initiative shown and so much intelligence brought to bear upon this problem.

Quality Merchandise:—"In general, the success of any merchandising effort is judged by the sales profits made and the turn-over of stock. The ordinary department store can be taken as an example of sales effort based on these two factors. But there must be a different

major consideration underlying any merchandising effort on our part. Sales profits or stock turn-over should not form the foundation in our case. Basically underlying our whole merchandising fabric is the subject of increasing the sale of gas.

"Our primary purpose in any sales effort must be the extension and development of our business through the sale of appliances purely on their value as utilizers of gas. There can be no doubt about that. Therefore, unlike the department store, we are selling for the future; more than the immediate sale is at stake. This means that the appliances sold must initially conform to the highest standards of gas utilization and, furthermore, must go on performing efficiently for an indefinite period and rendering useful service and bringing revenue to us long after the sales transaction has been forgotten. Our sales effort might well be said to depend on the one oft used word—service. If they fail in this respect, then it is our loss, and our merchandising effort cannot be considered successful.

"This axiom brings us squarely up against what I shall call Quality Merchandise. We have not yet fully overcome the tendency to follow the line of least resistance—the very human trait of taking the easiest way. No one will deny that it is easier to sell the lower priced of two articles when both, to all appearances, and especially to the purchaser, are very much alike."

Col. Fogg certainly struck the right note when he denounced as "poor business" the sacrificing of quality in order to induce low prices and easy sales: His statement was:

"But no one can sustain the claim that it is good business for us from any point of view to permit the sacrifice of quality in order to provide the inducement of low price, and easy sale. To cheapen the construction of a gas range to the extent of impairment of its durability, its safety or performance, is stepping back into the rut of former years, and no man here tonight would give his sanction to such a thing. Yet this very thing is being done, gentlemen. And, strange to say, the cases which have been brought to our attention indicate that it was not the manufacturer who was ready to take quality out of his product, but it was his gas company customer to whom the path of least resistance appealed as the most attractive. It was the gas company customer who had lost sight of the fact that he was selling for the future.

"We can all realize the grave menace in such a trend as this, and we can be thankful that it is not more general. We owe it to our business to see that it is checked. The modern merchandiser in the gas business today has not even the need of such a questionable excuse to sell appliances. In a land of twelve million automobiles—where the phonograph is a household possession of the poor and rich alike—and the great mass of people buy intelligently—he finds not only that quality counts, but that the buying public is willing to pay for quality at its fair price in preference to shoddy at its price. They

"Service" is the secret of successful salesmanship

have been educated and have learned through experience the false economy of the shoddy product."

Note at this point how Col. Fogg indicates co-operation between gas-men and appliance-men in the devising of standard specifications for the constructing of gas-appliances and observe how these specifications may well serve in the process of making sales at excellent living margins, but always of high type devices.

"Not only," said the Colonel, "has the gas merchant no excuse, but there has been placed in his hands the insurance policy for quality product, the Standard Gas Appliance Specifications. These were devised for the protection of the gas industry and in the interest of the users of gas appliances. They were the joint work of appliance manufacturers and gas company men. They are eminently fair—sufficiently flexible—are up-to-date because they are revised annually—and they insure quality goods!

"I am glad to say that many of our progressive companies refuse to handle appliances that do not come up to the standard specifications, and some find it advantageous to advertise that fact to their public, as in this case which came to my notice a few days ago!

"We now have on display new Gas Ranges, with many attractive features. Some are finished in enamel. All are built according to American Gas Association specifications, insuring good material and workmanship and perfect cooking results."

"There is ample evidence that such a course is eminently successful. Another company through advertising, acquaints its customers that it sells ranges built up to a specification—not those built down to a price—and this should be the attitude of all.

"It is time that the intelligent gas man took a firm stand in this matter—an unqualified stand in favor of quality goods. I hope we will find you all solidly supporting the standard specifications and withstanding any effort that may be made to cheapen the construction of gas appliances at the expense of essential quality. Let us keep the goods that go to our public and that use our commodity on a par with or better than those of our competitors.

"I have said that the public of today has been educated to buy quality goods. It has been properly said that commercial values are not fixed by theoretical arguments, but that they are fixed by trading in the market place."

The question must arise in the reader's mind, "Who has taught the public to buy quality, rather than to demand cheapness?" Has it not been in large measure and on a broad scale the merchant, and if so, has not the merchant been doing a work for the gas as well as other interests which has proven and will prove invaluable? Answering the question to one's self, let's be honest, and let's place the credit where the credit is due in view of the fact that the merchant has been almost universally flayed with the statement that he was selling inferior goods, and yet as we have gone about

in the stores of merchants, we have very generally found standard makes of gas appliances, makes that have complied with the specifications of the A. G. A. and makes that we largely find shown on gas company sales-floors.

"Values," said Colonel Fogg, "represent a consensus of opinion. That is where this education has come in—in forming this consensus of opinion. Therefore, it should be our task to make our public believe that gas service is *essential* to their comfort and happiness, and we should build up a consensus of opinion that gas appliances for every practicable reasonable purpose are necessary to the convenience and comfort of modern life. We should go even further than that. We should build up the consensus of opinion that gas appliances, while being such a necessity, are quality appliances.

"Much has been done along those lines, but I believe the question may properly be asked, that if, in this effort, we have not been just a trifle too practical and too prosaic. In other words, have we not slighted the quality element, or have we not omitted certain phases of quality which I believe are the most appealing in such an effort? Take, for example, those arguments which we will offer in behalf of a well built gas range, a good water-heater, or an efficient industrial appliance. They usually rest their popular appeal upon the claim of economy and certain obvious and well-known advantages over solid fuel-using equipment. Can we not go further in developing this "value" by popular opinion? Can we not go further by bringing out the more appealing side, emphasizing the things that reduce labor, that make care and attention unnecessary, that add to the attractiveness and appearance of the appliance, that give it 'class' and make it a desirable acquisition from that standpoint alone? Convenience, time saving, labor saving and beauty! Why should the gas men stammer over the word 'beautiful' in speaking of the modern gas range when there are ranges that well deserve the term? Yet he does. The housewife will use it freely when she shows the range to a neighbor. Her's is the pride of ownership. But many a gas man finds some hesitancy in using such a glowing adjective, though it be the literal truth and though his should be the pride not only of ownership but perhaps in a measure of conception. And in addition he has justification of the strongest sort. Put a modern gas range in the average kitchen and the tone of that room is elevated; put a storage type automatic water heater in the average cellar and the first step has been taken to make that cellar a real habitable part of the house; and when the first modern industrial appliance goes into the average shop it is an object lesson in what a different place a shop can be.

"Possibly it is because we know these advantages so well that we take them for granted, but it is to just such points as these that we find the electrical industry constantly directing attention in their effort to increase the popularity of electrical appliances—to form that consensus of opinion. Let us be more prompt to add these advantages to those that are usually given when the merits of modern gas appliances are described. In short,

Deserve these: Respect and love.

let us put the appeal more on the popular side. We have many such talking points, but too few have been used. See what the push button lighting and thermostat control did for our ranges—boosted forward in leaps and bounds even the best of our ranges. Why? Because we talked about them. They were additions that come in the convenience class and we told the public so. And that is exactly what we need—more improvements of that character to exert their strong popular appeal. It is no longer enough that our appliances will satisfactorily do their work economically and efficiently; they must be made to do it with the greatest convenience, the least amount of care and attention, and they must have the virtue of attractive appearance as well.

"Primarily it is up to the gas men themselves to encourage development along these lines, and that encouragement must take the practical form of readiness to pay for quality and value. I find this view reflected in a recent article by Mr. John H. Hartog, of the Portland (Oregon) Gas and Coke Company, who expresses his opinion in words that, I think, will bear repetition:

"The principal thing for a gas company to impress upon the public is that they sell only the best. Don't ever sell an appliance just to cater to a depraved taste for cheap trash. Let the other man do that if he wants to. But the gas company should be like Caesar's wife. It will take time to educate a hundred million people that the gas company cannot afford to sell inferior appliances.

"To us the reasons are patent, but the problem is a difficult one. Only by convincing the sales people of this fact and by continually instilling it into the public mind can one gain that prestige. But once gained, it is worth all it cost to secure.

"Just think a moment. If you want a silk hat, a real swell tie, a pair of full dress shoes, a tip-top meal or a good auto, where do you go? Do you visit some second-hand shop to see how cheap you can get it? Do you patronize a place you never heard of? No, you make a bee line for the place where you know you are going to get the best. The same standard can be established for gas appliances and the public made to feel that if they really want a reliable article they are always safe at the gas company. It will help your sales, increase your turn-over and profit and reduce your tribulations."

Public Relations and Good Will:—"For me to venture at any length on the ground of public relations is uncalled for, for you have been addressed upon this subject by able speakers at several of your recent meetings, and I doubt if there is anything that I can add that would not be very largely repetition. Yet as a factor in our commercial development it is of the utmost importance.

"Something over a year ago, in speaking before the Wisconsin Association, I said that a generous appropriation for advertising should be as indispensable an item in every gas company's budget as coal, oil and labor. I am glad to see this view coming into wider

favor and finding repeated expression in various sections of the country. Advertising has been a modest little item—tucked away in an obscure place down toward the tail end of the gas industry's budget, but in spite of this, he has been working hard for our business, growing in strength and doing us immense good. Based purely on results accomplished, he has earned promotion. He ought to come higher up in the last with a raise in wages that will put him into the class of absolute necessities.

"Broadly speaking, we are merchandisers of an indispensable service, but it should be remembered that this service has been made indispensable only after a great many years of the most painstaking effort. We are running into an era of great and, we hope, unprecedented prosperity, and we shall participate in that to the extent of the sales aggression that we bring into play.

"We would do well to discard the thought that gas is a necessity. It dulls the sales sense and lulls us into a state of apathy. Only to those who know the convenience of gas service, is that service a necessity. To the millions of persons in this country who use candles, oil lamps and coal stoves, gas is not a necessity. It won't be, until they have been sold.

"An aggressive sales policy backed up by an equally aggressive advertising program is the combination that we need. They go hand in hand. They constitute the normal way of doing business. We can't have one without the other, unless we are willing to do business on a reduced scale.

"Although we are a greatly under-advertised industry, we are at this time using more newspaper advertising space than we ever did before. In the year 1920, for example, 140 gas company members of the Association whose total annual gross sales of gas, exclusive of appliances, was \$98,000,000, spent \$843,000 for advertising. This is about eighty-five cents for advertising out of every hundred dollars of gross business. We should like to see our companies appropriate one per cent of their annual gross receipts for this purpose. If this were done, the 966 gas companies in the United States would have an annual budget of \$3,800,000 for advertising. Add to this the splendid national advertising done by a number of our progressive manufacturers, and you can easily visualize the big strides that we could make.

"The newspaper publishers of the country know the Association's stand on this matter, for it was discussed at their annual convention in New York City recently. Hereafter, the publishers are going to devote more attention to public utility advertising. They are going to ask us to buy the white space in their newspapers for the purpose of selling our service and appliances. Let us patronize them liberally, keeping in mind the thought that the American newspaper as a moulder of public opinion has no equal.

"Now with our machine beginning to take the hills on high, we find renewed faith and optimism wherever public utility men gather. We see the long and depress-

ing period of commercial inactivity in the retrospect, and the gas business commercially is a brighter prospect than it has been at any time since those first years of the war when our development work was curtailed and sales organizations which had been carefully developed were practically dispersed. It is to be hoped that in the glow of satisfaction which comes with these better times, we will not forget that branch of the industry that stood by us loyally when our troubles were great. The manufacturer is an integral part of the gas business. He had just as hard sledding as we did. Our troubles were in part his own, and he suffered because of them. With our commercial development curtailed, his sales were hard hit, yet he stood by and in more than one case that I know of he extended credits that kept the appliance business from dying an inglorious death. He deserves consideration now, and it should take tangible, practical form. The rehabilitation of commercial activities will be accompanied by the resumption of the purchase of appliances for resale, and it is to be hoped that they will be bought in volume and quantity commensurate with our optimism.

"I think I have said enough on the question of price, yet the temptation is upon me to repeat that it is not in the interest of our business nor is it in the interest of our customers to buy the cheapest article nor hammer down the manufacturer to the lowest possible price. There is a fair level in all things, and we can't go under it without being hurt in the long run. We need better merchandise in our business, and I firmly believe that better merchandise will stimulate sales—not hinder them. Improved semi-automatic and efficient appliances will never come about with a price-cutting market, in fact all the needed improvements point towards the necessity of more expensive construction, and if we want these improvements to come about we will have to encourage the manufacturers by helping them sell better grade appliances.

"Your organization and ours have done much to bring the manufacturers in our business and the gas men into closer contact. I do not mean as individuals, but as representative groups having the same broad interest and purpose.

"You may know it already, but it is worth repeating, that in every effort made in the interest of our business, in every activity in which the aid of the manufacturers as a group was needed or asked, they have stood unfalteringly with us, and no man with a normal sense of fair play will deny that we should stand with them.

"There is one more factor that will ultimately exercise the strongest influence upon our commercial expansion—the universal adoption of scientifically constructed rates. How many of us have cursed the fixed, inflexible, straight line rate when up against the problem of competition with other fuels for large volume business. It has always been almost an insurmountable restriction. While many companies have broken away from this straight line restriction, there are still many more who

are struggling along with it. But at the present time I am glad to say there is a growing tendency toward the adoption of more scientific principles of rate making. Nowhere in our business are there more encouraging indications than this tendency.

"The rate structure, admittedly one of the most important elements in any business, is especially so in ours, and it is this element that is at last receiving the attention which its importance demands.

"These are good signs, but the best sign of all is to be found on the faces of the commercial men in our industry. Subjected to discouragements that no other group of men in the business had to face (unless it be those who had to make the long struggle for justice in the matter of rates), the commercial men are bringing to their task real knowledge, backed by splendid loyalty and enthusiasm, and they will carry the gas business forward, to its proper place among the nation's essential enterprises."

CORPORATION ORGANIZED TO OPERATE IN MONROE FIELD

THE Arkansas, Louisiana & Texas Development Company has been organized with a capital stock of \$6,000,000, and will engage in the development of territory in the Monroe fields in northern Louisiana, as well as in southern Arkansas, and in carrying the gas produced through pipe lines to be constructed to points of consumption. Those who are interested in the project are: President, Walter L. McCloy, Tulsa, Okla, formerly General Manager of the Philadelphia Gas Company, Pittsburgh, with an advisory committee composed of Dr. J. S. Cullinan, of Houston; Glenn Braden, of Tulsa and Pittsburgh, and Norwood Johnson, of Pittsburgh. Three Vice-Presidents: Thomas P. Lee, of Houston; E. F. Frost, of Shreveport, and L. F. Jordan, of New York. Board of Directors: T. P. Lee, E. A. Frost, W. L. McCloy, Beverly D. Harris, L. A. Spiess and John Walsh, the latter two of Washington, D. C.

Pipe lines will be in charge of J. M. Dutton, Houston.

Three subsidiary corporations have been formed by the Arkansas, Louisiana & Texas Development Company which will have in hand the sale and distribution of the gas developed in the fields,—these are the Texas Development Company, the Louisiana Development Company, and the Arkansas Development Company.

A contract with refineries at Port Arthur, Texas, a distance of more than 250 miles, has already been booked, and will require 60,000,000 cubic feet, while domestic uses in the same city will require 5,000,000 cubic feet. Port Neches, Beaumont, and other cities will be on the company's lines, and more distant points, such as Memphis, St. Louis and New Orleans are under consideration.

Do what you have to do so well that the Boss won't have to do it over again—The Lamp

Public Confidence

Aids In Securing It

By J. F. HULL

President the Missouri Press Association

PUBLIC confidence and good will must be the cornerstone in the foundation of every successful business enterprise. No matter how substantial the materials of efficiency, service, accommodation, that enter into the wall structure, the absence of this cornerstone leaves the foundation incomplete and renders insecure every bit of the superstructure that may be erected.

Fundamentally, the same principles are involved in the building of the smallest individual business and in the launching of the most elaborate corporate body. It is only in the application of those basic principles that the difference arises. The one-man business is simple. The proprietor is in direct contact with his patrons, has opportunity to correct any misunderstandings that may develop, has occasion to discuss his business problems, his ambitions, his advantages and his disabilities with those individuals who give him their patronage.

The large corporation is complex. The personal contact between proprietor and customer is gone. All that the corporation can offer to take the place of this human interest contact is the greater efficiency and lowered cost that come with large volume of business, special buying facilities, great capital.

But with all of the advantages that may belong to the multiplied industry, it cannot attain a large success unless it has in its list of assets that intangible item of good will. And however the individual merchant may be handicapped by reason of limited capital and small buying power, his business may grow amazingly when the patrons to whom he caters have confidence in his wares and believe in his integrity. All of which points to the value of the human equation in business.

Folks are peculiar. They are as full of notions as a berry is of seeds. Few of them are scientific, many of them are unreasonable, and, yet, practically all of them are disposed to be fair. Even when they are the most unreasonable they are actuated only by what seems to them to be perfectly honest and proper motives. Given the facts as they actually exist, explained in candor by those whose past performance justifies their confidence, and they are glad to recede from a false position and

will go beyond the demands of justice to make amends for any wrongs they may have committed.

We are in the midst of big developments in all the departments of life. We are emerging from an era of individualism and are attempting to adjust ourselves to the new situation of mass formation. Captains of industry view the great industrial organizations that they have evolved from small beginnings and persuade themselves that they are the great primary source of created wealth, the guardians of the country's prosperity; and that because of their tremendous importance in the world, there can be no limit to the toll they make take, the splendors they may spread.

Wage earners, in the shops and mills and factories of these captains of industry, arrive at their notions of the industrial life by what they see at the other end of the business. They find that the wage that comes to them at each pay day must be distributed with the greatest care lest the total may not reach far enough to cover the necessary expenses and leave a mite for the savings against the inevitable rainy day.

Out of this apparent inequality of reward, there has grown a wide gulf separating capital and labor, which must some day be bridged if this free government is to endure. But I am not here to talk about the issues of capital and labor, and the only excuse that may be offered for what mention is made of the industrial unrest, is that it does have a place in a discussion of public relations of public utilities to the extent that any misunderstanding between any of the parties to the compact—capital, labor and the public—must be adjudged before the great desideratum of industrial life may be achieved.

What has been said regarding the quality of the cornerstone of business applies to public utilities in a particular way, because the public utility is of necessity, a monopoly, not subject to the competitive hazards of private business owned by an individual or a corporation. Because the public utility is essentially a monopoly, there is a tendency on the part of the public to suspect its management of enforcing unreasonable rates, and there is an undeniable disposition on the part of the employees of the utility to fail to observe that carefulness of explanation of a misunderstanding, and that consideration of the good will of a "peevish" customer, that would obtain if that employee were the owner of the business and felt that danger of competition which belongs to every private commercial enterprise.

He who takes good care of the present, need never worry about the future

Good will is absolutely essential in the successful conduct of privately owned public utilities. Without it, the utility either suffers such a loss of patronage as to make the venture unprofitable or an indignant public votes to establish a municipally owned utility to displace the offending corporation. Public ownership of public utilities is the one weapon the people have against a privately owned utility that is in the bad graces of its clientele.

There are many in this country, I believe a very great majority, who do not favor public ownership of public utilities. They believe that the perpetuity of this civilization is best assured through the development of the personal initiative of an enlightened citizenship, and public ownership discourages individual initiative, submerges the individual and sets up mass rule in his stead. Public ownership of public utilities is the thin wedge with which the Socialist hopes to separate the forces of representative government and make room for the communistic state.

If there be truth in what I have said, then the tremendous importance of public confidence and good will in the assets of public utilities may be recognized, and any policy of public relations that will maintain good will where it already exists and develops it where it now is lacking, deserves the most serious consideration not only of those of you who have your capital invested in public utilities, but of all citizens of this country who are concerned with the future of our form of government.

First, I shall assume that each of you has a company that is giving its patrons efficient service at a reasonable charge. Added to this primary requisite must be a courteous, obliging, considerate corps of officials, managers, superintendents and employees. With these your utility is not likely to experience any great amount of unfavorable public sentiment. Without these the case is absolutely hopeless.

Intelligent, persistent and consistent publicity is the final ingredient in the potent mixture. Publicity is an easy word. It sounds so simple that many people do not take it seriously. But it is one of the biggest words in the English language. It has made and unmade statesmen, it has made and unmade governments, it has made and unmade giant industrial combinations. Publicity—advertising—is the Thor of modern civilization. And just as the thunder god of the old Norse mythology made the valleys and plains by the strokes of his giant hammer, so publicity in this day makes its mark upon the affairs of this old world and shapes the thought and moulds the opinions of all men.

If it were given to me to provide the plan for advertising the public utilities of this State, I would proceed substantially as follows:

First: Series of conferences between the executive heads and all employees of the various utilities. At these conferences the public relations policy of the corporation would be discussed in detail, having as the objective the thorough understanding of the executives and their sub-

ordinates in their contact with their patrons. These representatives of the public utility corporations should be thoroughly sold to the idea that they are the corporation, so far as the local patrons are concerned, and they should never miss an opportunity to talk over with their patrons some of the problems of the company.

You know, the man does not live who is not flattered when he is consulted about the other fellow's problems. As nearly as possible, every customer or possible customer should be made to feel that he knows, in an intimate and personal way, something about the difficulties, the ambitions, the plans of the public utility.

These suggestions that you talk over your business with a lot of men, who know next to nothing about your business, may seem trivial and the time so employed all but wasted. But I am reminded of the story of Horace Greeley, that often he read some of his more perplexing editorials to the office boy and talked over the points he wished to put over. And Horace Greeley, in his day, was considered a pretty good editorial writer.

Having prepared the way for better public relations through the local executives and their subordinates, there should be a series of advertisements and circulars and pamphlets prepared in harmony with the work of the men who have contact with the public. These advertisements should set forth, with frankness and fairness, the things that the utility is doing for the public, the improvements it hopes to make, the difficulties that must be overcome, the supervision as to rates and methods of operation that the law provides, and the many other items concerning the ownership, management, service, etc., in which the people may be interested and, in becoming interested, they have become, to some extent at least, favorably inclined toward the company.

I have been observing in the last two weeks, perhaps, a series of advertisements put out by the Kansas City Telephone Company, that I think present the case in a wonderful way. They have—perhaps some of you have seen it—with a series showing a picture of a girl dressed ready to go to work, and the heading is, "She is just a neighbor girl of yours." Then this story goes on to say that she is one of your telephone operators, and it tells of the many connections she must make during the day, goes through to the peakload of the day, and now if she makes an occasional error, remember how many calls there are for her to answer, and then remember, "she is just a neighbor of yours."

That is humanizing the telephone, the telephone system; it is putting personality in there. Who is it, ordinarily, who goes to the telephone and calls for a number and thinks anything about who it is there answering and getting that connection for them? Very few of us. So that advertising does develop humanness in that big corporation that has little opportunity to meet its patrons face to face.

Last Sunday a large page advertisement appeared in the Kansas City papers, showed a large illustration of, I think, twenty-three buildings in which the telephone exchanges are located in Kansas City, and it went into detail of how many people were employed, thirty-five

"Capital" is the other fellow's money. Trying to get it away from him is "labor."

thousand, I think. It went into a lot of that detail that the people should know and that, knowing, it helps them to feel that it is a big thing, that it is doing a great work, that it means a great deal in the community. So I think that is one method of advertising that should appeal particularly to all public utilities, should appeal to all classes of large corporations.

The advertising matter so prepared should be given to the various corporations to be used either as prepared or merely as suggestions to aid the individual executive in the preparation of his own copy. Where possible, the advertising matter should be localized, made to fit the peculiar conditions that attend the particular corporation. Each utility should set aside a certain percentage of its gross income for advertising. The money spent for advertising is recognized as a proper expense item and may be figured into the costs of operation.

I do not know how much of the annual gross earnings of a public service company should be appropriated for advertising, but if the utility corporation follows the practice of other commercial institutions, the percentage will be from three to seven per cent of the annual gross earnings. That may be pretty little for utilities, I do not know, I am not passing on that.

This campaign should be long continued. It is the constant advertiser who gets the returns. Hundreds of thousands of dollars are wasted annually in this country by the sporadic advertiser. Either get into the game right, spend your money so that it gets results, or stay out and save your money. Hundreds of thousands of dollars are wasted annually in advertising because the copy is not well prepared and because the campaigns are not long enough continued. Do not allow yourselves to believe that the copy of your advertisement can be written hurriedly. It is a message from you to your customers and those who may become your customers, and it costs money.

While there are many methods of publicity—all of them more or less good—I believe the newspaper for gas advertising offers the cheapest and best medium. I believe the display advertisement is by far the most efficient form that may be used. In recent years the display advertisement has come into its own because of its sheer merit. It appeals to the reader in a straightforward fashion that carries conviction.

Time was when the advertiser believed he must disguise his message in order that he might get a hearing, so we have the ostensible news story with the advertising matter carefully tucked away between sentences and in indirect suggestion. But that time is happily passed. The display advertisement in the local newspaper is most efficient, because it appears in perfect frankness on the printed page. The reader is not tricked into reading it. I leave this message with you.

—By courtesy of Missouri Association of Public Utilities.

THE COWCATCHER

YEARS ago when cows roamed the plains and were allowed at large in rural districts through which railroads were built, that which is now called in steam-railroad-parlance the "pilot," was then termed the cowcatcher, thus in a word telling the story of why a locomotive should be provided with the then all-important guard against derailment threatened by strolling cattle upon the roadbeds.

In later days the "cowcatcher" has been continued, but more as a general means of protection; seldom for the purpose of sidetracking a cow. More likely an automobile, sad and unfortunate as this latter condition may be.

Though the oldtime protection remains placed upon the extreme front of the locomotive, it has, as we



CLEVER USE OF PILOT FOR ADVERTISING GAS APPLIANCES.

have said, acquired the more dignified title of "pilot," and for the protection of individuals as well as protection to electric street cars themselves, is utilized on our city street railways.

In St. Louis, Mo., we recently noted an indication that infrequency of accidents has led to other uses for the "pilot"; in other words, attached to this device on the front of an electric car were two signs, both illustrating and announcing a gas-appliance that has for years held its place among worthy appliances, but that has of late appeared more universally before the industry. The advertising-matter displayed upon the "pilot" of the electric car was a clever piece of business accomplished by the Laclede Gas Light Company, another evidence of the wide-awake attitude of the Laclede.

Our illustration clearly pictures the method of display, and the feature in the advertisement. The show-cards were not gotten up after a cheap manner but having been well designed gave an atmosphere of excellence to the whole proposition. The scheme was a good one.

Take this: A firm interest in your firm's interests.

ABOUT CLEOPATRA

THE "Imp" prints a very clever reference to that well known character of long ago, which, it occurs to us, might be applied to matters in our own business circle. The text reads as follows:

"Well, brother, speakin' of this here Cleopatra, now, Shakespeare spilled an oral cavity-ful when he said them words: 'Age cannot wither her, nor custom stale her infinite variety.'

"'Tis the truth that the *ages* ain't withered her, neither. Nor has the custom grown stale of usin' her in an infinite variety of ways in the advertisin' colyums.

Nowadays, every time you pick up your favorite magazine you bump smack into the Cleopatra person done in 10 fashionable colors. In the newspapers, too, the old girl looms up bigger than life; and goodness knows, she wasn't no airy trifle in the flesh, at that. It gets me, brother, how Cleopatra keeps her stand-in with the ad boys these days, when there ain't no noticeable shortage of short fillies with short manes, steppin' out in short skirts and mebbe showin' a glimpse of short socks—mebbe. Except Cleo, it's rare for any skirted bein' to show herself in the advertisin' pages with more'n a five-foot interval 'twixt her baby vamp curls and her baby Louie heels.

"Howcum Cleopatra gets drug into the limelight of the most conservative periodicals—papers that raise holy editorial eyebrows at the reeskay way that Cleo used to carry on in them mid-Caesian times? My guess is that it's becuz her complexion cud stand a whole lots closer scrutiny than her carakter cud.

"Where'd she *get* that 'smooth, flawless complexion which makes the possessor seem ever young?' Ask the Palmolive Co. They knows. But seein' as they've made the matter public theirselves, mebbe they won't mind if I copy it off for you. Palm and olive oils—they was the 'whole secret of Cleopatra's charm'—that's how she kept that school-girl complexion so many years beyant the postest of her post-graduate courses.

"You'd think it was plain enough what the Palmolive people write—that Cleo owned her beauchousness to the stuff she put on her face. But the Dromedary Date folks don't believe a word of it and don't want you to. It wasn't what she put *on* her face, but what she shoved *into* it, that made 'the two most powerful emperors of the age lose their hearts to her,' as their ad says; and then the ad goes on like this: 'What was the source of her radiant health, her rich, soft coloring and her perfect teeth? What did Cleopatra eat? * * * Of one thing at least you can be sure. Like all the beauties of the Orient, she had learned the secret of the date.'

Surest thing! There was her dates with Antony and her dates with Caesar and for all we know she went out to fill the dates on a Dromedary. That makes the proposition 99-44/100% truth in advertising, besides a Dromedary Date bein' a doggone good thing even without Cleopatra's teeth bein' brought into it.

"Just when a feller is reconciled to lettin' the Palmolives and Dromedaries settle it with mitts, another Cleo-

patrian advertiser pushes into the ring. "Pooh, be off wid your oils and dates," says Schwarzenbach, Huber & Co., manufacturers of Society Satin. 'Cleo could o' washed the face of her with Naphtha Soap and dined offa pickled tripe and it wouldn't of made a bit of diff to her boy friends, but suppose she'd of breezed in wearin' cross-barred calico—huh! Fat chance she'd of stood with Tony.

"'Hold on there, my friends,' says a cold, green voice reachin' out from the rotogravure section of the newspapers to jine in the discoosion. 'You're all wrong, every one of you. Figures don't lie—so behold Cleopatra's figure—the true secret of her charm.'

"'Tis shockingly undressed—Cleopatra is—in the rotogravure ad, and a feller glancin' acrost it hurriedly, and seein' a 42-point nameplate in the middle, would nacherly suppose Cleo's waitin' patiently for Stylish Stout corsets to be invented, but it seems not. The ad says different. It calls her a 'woman of heroic mold,' one of them statuesque janes 'with superb physical development who tread history's boards most proudly.' Her figger's her fortune—also the advertiser's.

"Cleopatra's charm surely ain't worked to pieces yet. Come on, you ad boys! What's the matter with you blanket manufacturers? Are you *sure* it was Cleopatra's figure that charmed Caesar so, or the art work on the coverlet that she draped acrost her shoulders like a Greenwich village fan?

"What's the matter with you jewelers? Wuzn't Marc so plumb captivated by Cleo's made-in-U. S. A. diamonds that he didn't give a early Roman tinker's dam whether she wore Society Satin or not?

"What's holdin' you canoe manufacturers back? Didn't Caesar fall for Cleo's charm the minute he saw her lollin' back gracefully in her water flivver? Did he ask her if she et dates to make her so charming? He did not.

"And, or you Mortified Cocoanut Oil, that might have been such a blessing on Cleopatra's head if your advertisin' manager had only thought of it. Palm and olives, piffle! Say it with Cocoanuts!"

Largely the secret of popularity lies in the clever way that the advertising manager has prepared his copy in which Cleopatra was to play her part in these modern days.

The author of the article has failed to mention gas-ranges when he asks the question, "What's the matter with you blanket manufacturers?" etc. We have yet to hear of a Cleopatra range, or the expression, "Say it with a gas-range."

A story may be often told, and yet possess a charm. It's the style in ad writing that accomplishes and holds attention. Clever, indeed, have been the ad-writers' pencils that have woven Cleopatra into their story, though as yet she has not entered the field of her sisters. Apparently that still remains for her to exploit, namely, the field of range production which has so great a charm for the modern woman.

Remember that the misfortunes hardest to bear are those which never come—Lowell

NATURAL GAS IN 1920

THE production of natural gas increased 8 per cent in 1920, according to E. G. Sievers, of the United States Geological Survey, Department of the Interior. The recorded production was 860,540,000,000 cubic feet, which included 62,330,000,000 cubic feet of gas reported by the operators as wasted, most of it at the wells. The figures last given do not represent the entire quantity of gas wasted, however, but as the prevention of the waste of natural gas is a great economic problem the Geological Survey publishes them to show at least the waste actually reported. They do not include gas wasted in transmission and utilization, concerning which the Geological Survey did not obtain statistics. Although the data are thus incomplete they indicate the magnitude of our waste of natural gas and should emphasize the necessity of reducing the quantity wasted to the minimum in order to prolong our supplies.

Consumption:—The consumption of natural gas in 1920 was 798,210,000,000 cubic feet, an increase of 58,294,000,000 cubic feet, or 8 per cent. About 36 per cent of the gas was consumed for domestic use and the remainder for industrial use. Up to the last few years over two-thirds of the gas was used in industrial establishments, but the recent tendency has been to conserve it for domestic use, so that less gas is now used in the industries. There was an increase of 113,581 domestic consumers and a decrease of 3,462 industrial establishments using natural gas in 1920.

The value of the total consumption in 1920 increased 23 per cent over that in 1919, and the market value of the gas used for domestic and industrial purposes increased 25 and 20 per cent respectively. The gas wasted would

probably have had a value of about \$15,500,000. The value of natural gas is being realized more and more, and many of the producers and distributors are obtaining increased rates, which will make the gas worth saving and produce more economical use.

The following tables show, by States, the quantity of natural gas produced and consumed in the United States in 1920.

NATURAL GAS PRODUCED AND CONSUMED IN THE UNITED STATES IN 1920

State	Production		Consumption		Average price cents per M cubic feet	Value
	Per cent of total	Volume (M cubic feet)	Per cent of total	Volume (M cubic feet)		
West Virginia...	28.4	244,745,000	12.6	100,289,000	18.0	\$18,015,000
Oklahoma.....	19.3	166,265,000	15.9	126,689,000	14.8	18,699,000
Pennsylvania....	14.9	128,175,000	20.2	161,397,000	32.1	51,863,000
California.....	8.5	73,263,000	8.3	66,041,000	19.0	12,529,000
Ohio.....	8.4	71,854,000	17.1	136,872,000	36.8	50,374,000
Louisiana.....	7.4	63,545,000	5.8	46,219,000	07.1	3,283,000
Texas.....	5.1	44,160,000	6.2	49,467,000	19.0	9,398,000
Kansas.....	3.1	26,891,000	4.1	33,140,000	26.0	8,603,000
Wyoming.....	1.5	12,956,000	1.3	10,312,000	07.8	805,000
Arkansas.....	1.1	9,614,000	2.4	19,050,000	21.1	4,021,900
New York.....	1.0	8,522,000	2.4	19,127,000	45.6	8,721,000
Kentucky.....	0.6	4,677,000	1.9	15,297,000	31.8	4,865,000
Illinois.....	0.4	3,150,000	0.4	3,013,000	15.8	477,000
Indiana.....	0.2	1,853,000	0.5	4,435,000	42.7	1,893,000
Montana.....		820,000		818,000	10.6	88,000
South Dakota...		20,000		20,000	60.0	12,000
Tennessee.....		15,000		15,000	20.0	3,000
Colorado.....		8,500		8,500	12.9	1,100
Missouri.....		3,800		5,429,000	67.9	3,684,000
North Dakota...		1,100		1,100	27.3	300
Iowa.....		800		800	37.5	300
Michigan.....		400		400	75.0	300
Oregon.....		200		200	50.0	100
Maryland.....		200		569,000	56.9	324,000
Total.....	100.00	860,540,000	100.00	798,210,000	24.8	197,660,000
1919.....		798,860,000		739,916,000	21.7	160,888,000

The above last named ten states supplied 0.1% production and 0.9% consumed.

DISTRIBUTION OF NATURAL GAS CONSUMED IN THE UNITED STATES IN 1920

DOMESTIC

State	Manufacturing				Drilling and Pumping				Other Industrial (power)				Total Industrial			
	Number of consumers	Volume (million cubic feet)	Average price (cents per M cubic feet)	Value	Number of consumers	Volume (million cubic feet)	Average price (cents per M cubic feet)	Value	Number of consumers	Volume (million cubic feet)	Average price (cents per M cubic feet)	Value	Number of consumers	Volume (million cubic feet)	Average price (cents per M cubic feet)	Value
Arkansas.....	34,318	5,130	38.4	\$1,968,000	377	13,636		\$2,031,000								
California.....	215,769	12,084	61.4	7,420,000	1,402	4,057		372,000								
Illinois.....	4,436	388	45.9	178,000	184	1,074		102,000								
Indiana.....	35,166	2,702	45.4	1,228,000	288	1,577		635,000								
Kansas.....	115,750	13,435	41.7	5,599,000	558	9,852		1,451,000								
Kentucky.....	100,308	9,531	37.3	3,553,000	125	4,695		988,000								
Louisiana.....	22,266	4,847	17.5	850,000	877	25,369		1,227,000								
Maryland.....	10,276	486	57.1	277,000	39	76		43,000								
Missouri.....	75,991	4,750	73.3	3,484,000	236	184		57,000								
Montana.....	1,040	155	47.7	73,000	2	651		13,000								
New York.....	190,185	17,824	47.2	8,416,000	494	101		38,000								
Ohio.....	937,267	96,740	38.3	37,038,000	4,084	27,822		10,419,000								
Oklahoma.....	122,947	19,640	30.5	5,984,000	3,367	40,687		4,701,000								
Pennsylvania....	510,178	66,161	37.3	24,659,000	4,918	76,783		22,160,000								
South Dakota...	521	14	71.4	10,000	5											
Tennessee.....	71	4	50.0	2,000	3											
Texas.....	105,599	9,894	43.6	4,318,000	1,380	4,524		776,000								
West Virginia....	131,093	21,150	25.3	5,346,000	2,527	57,819		9,361,000								
Wyoming.....	1,833	1,058	34.4	364,000	58	2,896		81,000								
Other States(a)...	29	10	20.0	2,000	1											
Total.....	2,615,043	286,007	38.7	110,769,000	20,925	271,803		54,455,000								
1919.....	2,501,462	255,743	34.6	88,414,000	24,387	269,123		45,510,000								

(a) Colorado, Iowa, Michigan, North Dakota and Oregon.

Rather be criticized for falling down on your job than for laying down on it

STOP SCRAPPING

THE history of the world is not much more than a record of one fight after another. Ever since Hammurabi mopped up the people he didn't like around the Garden of Eden and elected himself mayor of Babylon, all the nations of the earth have been getting their names on monuments and in books principally through their scraps.

We read about blood and war in the Bible. Our kids get their Greek from Xenophon's *Anabasis*, which is fight all through; their Latin comes from Caesar's Gallic wars, and their English, such as they get, is a bellicose brain-storm in which the Anglos and the Saxons kill off the Danes and drive the Picts and Scots into the icy sea. That's scarcely done, when William the Conqueror gets a radio that Harold is itching for a scrap, and both arrange to meet in the bull-pen at Hastings.

As we study these polite happenings in early society we smile contemptuously at the barbarian outbursts of our ancestors. Then we pass over seven centuries of almost continuous bloodshed in Europe and take up the story of America, only to find that it, too, begins with a four-ply fight among the English, French, Indians and the first-cabin passengers of the *Mayflower*.

From the close of the Revolutionary war to the end of 1865, every decade in the history of the United States had a fight in it, or the threat of one. The smell of the Civil war hadn't blown away when we took Spain on our lap and raised blisters on her Morro Castle. Sixteen years later the Kaiser, who had been chewing his tongue since he fired Bismarck, spat in the face of the world, and—

Here we are.

Hatred, suspicion and selfishness are contagious diseases. The infection that broke out in central Europe eight years ago has spread its inflammation over the entire world. Although the war ended nearly four years ago, the dominant spirit of the people of the earth is still FIGHT! That is, if the newspapers don't lie. According to what we see, hear and read, everybody carries a gun. Crime is worse than it was in the days of Robin Hood or Jesse James, and much uglier. Nations disarm with one hand and make secret treaties for a bigger fight with the other. Capital fights labor, and one labor union fights the other. It is no joke to read about some senator thrusting a hairy fist from out the folds of his toga and climbing over his desk to brain the senator who holds another viewpoint. The family circle is not exempt, and divorces are too common to be news. Even the church has its gladiators, and society seems to have turned itself into a continuous bull fight.

At the same time our science conquers the sea, the land and the air. We pride ourselves on having mastered the menaces of yellow fever, smallpox and other virulent diseases. We know something about everything, and nearly everything about some things, but yet we seem to lack the knack or the knowledge or the inclination by which

we can have friends and be friendly in the largest possible way.

We have been actuated by our antipathies instead of our sympathies. Constantly in fear of what the other fellow might do to us, we have been doing it to him first. This is bad business. We can't fight and work too. Isn't it about time that we diagnose this fight disease, take a dose of antitoxin and get ready to be mentally and spiritually well again? The most important thing in business, as in chemistry or mathematics, is the principle of the thing, and if we can get back to the correct principle of doing business there will be no occasion for fights or arguments. The tendency in this direction is already noticeable, and the thing now is to accelerate it and get the benefits. Let's do more clean thinking and quit scrapping.

—By courtesy of *The Imp.*

THE CREED OF LOYALTY

ALTHOUGH Elbert Hubbard, widely known, passed away at the time of the sinking of that great passenger steamer, which event helped to lead us into war, many of his writings have continued to serve the purposes for which they were intended.

Among the writings of Mr. Hubbard that will live for many years, are counted the following lines which are well worth the reading by young and old alike, but especially the young who are entering the fields of labor. Mr. Hubbard wrote:

"If you work for a man, in heaven's name work for him. If he pays you wages that supply you your bread and butter work for him, stand by him, and stand by the institution he represents. I think if I worked for a man I would work for him. I would not work for him a part of the time. I would give an undivided service or none. If put to a pinch, an ounce of loyalty is worth a pound of cleverness. If you must vilify, condemn and eternally disparage, why resign your position, and when you are outside, swear to your heart's content. But, I pray you, so long as you are a part of an institution, do not condemn it. Not that you will injure the institution—not that—but when you disparage the concern of which you are a part, you disparage yourself."

PRESS COMMENT

GOOD HOUSEKEEPING has taken a hand in the campaign of natural gas interests, looking toward conservation through the use of more effective appliances than have been generally sold in various natural gas centers during years past. The magazine refers to the demand, which is increasing with the products, decreasing in volume, as evidence of need for higher rates than formerly. It's a good move get national magazines talking along these lines.

Keep these: Your word, your temper and your friends.

Turn to this. Your wife's judgment when in doubt

to the extent of \$10,000,000 will in ten years, if it meets the probable growth, have \$30,000,000 in the business. The question naturally arises, "Where will all this money come from?" The first thing to know is to have some clear idea of the amount of money which will be required, and then to arrive at and adopt some sound plan of financing which will expand with the business and permit of any extension which may be required.

As we look back over the last thirty years and think of our shortsightedness at the beginning of that period, how we tied up our properties with closed mortgages and plans which have proved embarrassing and entirely inadequate, we feel that we must not be caught again, and that our plans must contemplate the most adequate requirements, but I have no doubt that at the end of a similar period we will feel that we knew as little at this time as our predecessors of three decades ago did when they laid their plans.

One thing seems certain—that we have reached a point where a large part of the money necessary to public utility service in any community must come from that community. In other words, if the people of a city want ample utility service, they must provide at least a part of the money necessary, and it also seems desirable that these people should put their money into the business as partners and not as money lenders. In the past it has been the practice to borrow fifty, sixty, and even seventy or eighty per cent of the money required for a utility from the lenders of money—people, who, as security for their money, took a mortgage on the property, and were consequently in a position, at any time that the interest or principal was not paid, to foreclose their mortgage and take over the property, without regard to the interests of those who owned the equity.

Those who have given the most thought to utility financing in recent years are reaching the opinion that this is undesirable, even in the most stable communities—that a very much smaller part of the capital should be borrowed money, and that an increasingly larger portion should be put in by people who invest in the business as stockholders, or, in other words, as partners in its ownership. This, with the growth of companies, would mean a very large number of partners, as these enterprises are getting too big for any one man or group of men to own any considerable part of them. The stock ownership must, and should be, divided among a very large number of people. In other words, we are rapidly running into public ownership—not municipal ownership, but public ownership, where a very large number of people own the company, and while in one way the condition may be very similar to municipal or state ownership, in another way it is very far from it, as the people who own the company, no matter how large a body of them there may be, elect their own board of directors and officers to manage their property, and if these men whom they elect do not properly manage the property, they are in a position to remove them promptly and replace them with others who will.

In this new plan of public ownership, if it is carried out to a point where a very large number of the people

served are owners in the property, another condition is brought about which is of greatest benefit to the property, and that is the creation of a situation, due to the fact that the whole community are owners, where it is practically impossible for any harm to come to the property, because it has so many friends, and where, for the same reason, a fair return on the money invested is absolutely assured.

Under such circumstances, because of the safety of the investment, the people's money will go in at a very reasonable rate of return, based on the value of money which may prevail, or to look at it from another standpoint, if practically the same people who receive the dividends are paying the bills which make the dividends possible, there will be no one to object to a high rate of dividend, and the return to which the money is fairly entitled will be earned without hindrance. Contrast this with the situation which prevails with most utilities today, where commissions and people who are only interested as rate payers are prone to ignore the chance of the business, and assert that no greater return should prevail than prevails with real estate mortgages and similar investments, where the element of safety is much greater than it is in utility securities.

So far I have been dealing with generalities and with theories of utility financing, and you probably will be more interested in knowing what has been and is being accomplished by those who are doing the most at the present time in the matter of selling their securities to their customers. There is apparently so much money in the hands of the small people for investment, and those who are selling their securities in this way in small lots have been so successful, that just at the present time there is a feeling that it is very easy to get much more money than is needed, and many are temporarily at least turning from the sale of securities in this way, for the purpose of getting money to finance with, and are carrying the movement on from the standpoint of the good public relations which it develops.

Only recently a manufacturer in an eastern state has given voice to the view that it is undesirable to advertise and push customer ownership any more at the present time, that the companies are getting more money than they need, and that it is very much more important to devote advertising funds to the development of the utility business itself, and the apparatus and appliance business which depends on it, and which is somewhat slow at the present time.

A recent canvass of the situation indicates that probably two hundred companies in the United States are doing more or less in the matter of the sale of securities to their customers. Carefully prepared statistics from sixty or eighty of the larger of these indicate that the results during the past year have shown no falling off whatever in the disposition of people to buy securities. Certainly, the electric light and power business, and the gas business, have shown great improvement during the past year, and their securities are gaining daily in popularity, not only with the small purchasers, but also by larger investors and speculators in the general market.

A lot of us still keep our brains in captivity

The most important thing for us all to consider in connection with the customer ownership movement is that there is an excellent market for public utility securities just at the present time. While it is a fact that industry generally has been at a low ebb, and prices for farm products, metals, lumber, oil, and many basic commodities, have been low, their production being attended with actual loss, there are large numbers of people of certain classes who have more money to save than they ever have had before, and the very fact that ten to twenty per cent of the workers throughout the country have been out of work has stimulated these people to save money to a greater extent than they were saving when everyone had a job and was making large wages. The result is that there has been a better opportunity for the sale of good securities, rather than a poorer one, as a result of general conditions.

This condition may not last. Just at the present time the directors of Federal Reserve Banks in different parts of the country, in reports issued independently of each other, are sounding notes of warning, indicating that while general business conditions are improving, there is danger in relaxing any in the economies which have been put into effect, or in going ahead too fast. Prices, generally speaking, are not low enough as yet, and accumulations of wealth in the hands of the people are being depleted. Already there is a waver in the upward progress of the securities of our own industry, which may forecast a slight recession, as it is characteristic of the security market that it advances or recedes with a series of upward and downward swings, and this is in all probability only one of the very minor ones. These are indications which every cautious man will heed.

Therefore, as it is a very old principle in the raising of money by the sale of securities to "go when the going is good," I maintain that the company which is not taking advantage of the situation to at least sell enough securities to lay the foundation of a good market in the future is not properly looking after the best interests of its customers and owners. The records show that a surprisingly large amount of this stock is being bought by the younger people—young men and women with whom this is perhaps the first investment. If, as may be the case where the first investment is made in good utility securities, the result is satisfactory and profitable, in the natural order of things utility investments will become the favorite investment for all these young people, and as they grow older and continue to accumulate money they will add to their holdings.

In the case of the company with which I am most familiar, if on the average one customer in every three should buy each year one \$100.00 share of stock, the result would be more than a sufficient amount of money to finance the company's total annual requirements for extensions, and this does not seem an unreasonable amount to expect, for while one-third of the customers seems a rather high number, many of them would buy several \$100.00 shares per year, so it would seem that this average would be easily attainable.

I believe with very few exceptions all of the companies represented here today would find that the same rule applied to them would give them their annual financial requirements. While the growth in the number of customers, together with the constantly increasing percentages of stockholders would in all probability shortly place us in the very enviable position of enjoying a demand for our securities greater than the supply. As the percentage of capital represented by the holdings of partners or stockholders increased in proportion to the amount represented by bondholders, the situation of the bonds would be continually improving, so that if you continued to do part of your financing through the sale of senior securities, or in other words, bonds, they would be more in demand and could be put out on a lower interest basis.

The thing that is most needed today in this movement is that more companies should join it. The wonder to me, in considering the very great advantages, is that so few have started. Notwithstanding the tendency of recent years to consolidate many small companies into one large one, operating over a wide territory, there must be three or four thousand electric light and power companies in the country, and that only two or three hundred, or perhaps, to state it most conservatively, ten per cent, are availing themselves of this wonderful opportunity is truly astonishing. There are no doubt many companies that have considered it, but which are in a financial position that seems to make it unwise for them to attempt anything at the present time. However, this conclusion is in all probability due to the failure to approach the matter with a will to find some way of joining such a plan to the present financial structure.

I would say to those who are contemplating a similar move in the near future that the report of the Committee on Customer Ownership, which will be presented at the meeting of the National Electric Light Association at Atlantic City the week after next will probably be very helpful. This not only contains quite complete statistics of the results which have been obtained by some eighty of the companies which responded to the Committee's questionnaire, but also carries in the appendix two splendidly prepared pamphlets which will later be issued separate from the report, one a Salesman's Handbook for the education of the salesman, employee or otherwise, who may be engaged in this work, and one a Standard matter which has been effectively used by member companies which have done the most in this kind of work. The report will also contain reproductions of publicity matter which has been effectively used by member companies, and other similar matter. You will, I believe, find information in this and other reports which will enable you in a short time to acquire a grasp of the details of the operation which the pioneers have learned by long experience, and the success of others will help you to get past any discouraging periods which you may experience in getting started in this work.

One of the difficulties which you will probably encounter, which has been reported many times from this particular section of the country is that of placing a con-

If you have any hope of a managerial position, first learn to boss emotion—Kaufman

servative savings proposition, carrying a reasonable rate of return, among people who are rather prone to be looking for investments with a "kick", or speculations in other words, and who, living in an atmosphere of rich strikes and rapid increases in value, feel that small investments paid for over a period, yielding seven or eight per cent, are rather tame. I think, however, the trend of such things, even in this part of the country, is toward more conservative investments, and there are always a very large number of people in every community who are conservative in their tendencies, and who will find securities of the kind and offered on the plans which I have been discussing, most attractive.

There are other matters which you will find discussed in the reports, but which I would like to touch on briefly. One of these refers to the type of securities to be offered. There can be no rules laid down, but in general I would say, "Never sell a type of security to your customers which under the most trying conditions imaginable will ever fail to pay a regular return." Experienced investors understand that the stopping of dividends in periods of stress is the greatest protection to the interests of the stockholders, as the company's earnings are hereby conserved and the company is strengthened, just as the husbanding of resources in any organization, human or otherwise, adds strength, but the small investor who is looking for a place to put his savings where the return will be regular, and a dependable addition to his income, will not only be disappointed and soured by any cessation of that income, but will look upon it only as an evidence of weakness of the company.

Another point to which I would call your attention is the desirability of most prompt and businesslike action in all of your relations with the purchasers of securities under any such plan, such as the prompt issuance of receipts and certificates when due, and the very prompt collection of installments. Many companies have had too large a percentage of defaults for no other reason than because they have not followed up delinquencies in a sufficiently prompt way, and have allowed so many unpaid installments to accumulate that the subscriber has become discouraged and has stopped altogether.

One most important matter is to afford facilities for reselling securities with as little loss as possible in the case of subscribers or stockholders who for one reason or another find it necessary to dispose of their stock. A very little attention in such matters will avoid unpleasant situations which sometimes involve a general depreciation in the prices of outstanding securities. It has been found that a large percentage of the people who think they want to sell will conclude not to do so when they find that the company stands ready to do all that it could be expected to do from a business standpoint in assisting them to realize when they must.

While I have dwelt somewhat on these features, I would not have you think that they are at all serious. As a matter of fact, under the conditions of rising markets which have prevailed for the past year, they are almost

nil, but it is wise to have your situation always well in hand.

You will probably be interested in some information as to cost of selling. The practice of many of the companies as to the amounts of commissions, and the methods of paying, are covered in the report of the Customer Ownership Committee referred to, and there is also some information as to total costs, gathered from a few of the companies which have made the most careful calculations. One company reporting on the sale of 172,749 shares finds that the total cost of selling these shares was 94c per share. A second company on sales of 108,712 shares reports a cost of 70c per share, and a third company on the most recent sales of 52,106 shares reports a cost of \$1.89 per share.

This is somewhat less than the cost entailed during the first year or two after a company has begun to sell securities in this way. For instance, the last company named reported a little over a year ago, on sales aggregating 100,000 shares, a total cost of approximately \$2.85 per share. This cost, you will see, has gone down considerably, due principally to two things; first, the sale had reached a stage where, on account of the ease of selling the stock, it was not necessary to pay so large a commission, and second, such a large number of small stockholders had been acquired, some of whom had bought their first stock two years before, that they began to buy again, coming to the office on their own initiative for that purpose, such sales, therefore, not carrying commissions. The average sales cost shown by thirty-five companies reporting on this feature was \$4.30 per share.

Some of the matters for us all to remember in connection with the general subject of the integrity of utility securities are as follows:

Companies in all states should make an effort to have senior securities of the utility companies, and in some cases even more seasoned junior securities, declared legal investments for trust funds. On the grounds of safety there is no reason why this should not be done, and it will afford demand for our securities which will be helpful.

Another thing which should be absorbing the interest of people responsible for the financial affairs of our companies is the question of a secondary market. Half a century ago, when the steam railroad investments aggregated but a very small percentage of the amount of money today invested in public utilities, the New York stock exchange afforded a full and fair market for all railroad securities, whereas at the present time there is no great central place in the United States to which the owner or purchaser of public utility securities can turn to find a broad market and complete lists of the most stable utility securities. With the tremendous increase in the number of utility security holders, there is a great need for such a market, and failure on the part of the utilities to take concerted action in this direction is likely to develop into a very serious menace in the near future.

—By courtesy of Northwestern Electrical and Gas Association.

Execute this: There is no such thing as a "little thing" in business.

AROUND THE BELT

New Wells, New Pipe Lines, New Contracts, Additions and Extensions. A Fund of Valuable News Gathered for the Journal Through Many Sources.

TRADE PERSONALS

MISS. H. C. has been elected President of the Oil & Refining Company, a subsidiary of H. Healy & Company, Chicago.

JOHN T. H. of the Railroad Commission of having charge of oil and gas supervision in the commission for U. S. Senator on the Democratic ticket. He will run in opposition to James F. in the primaries.

JOHN T. H. Vice President and General Manager of the Oil & Electric Company has been elected chief of the newly organized Oklahoma State Chamber of Commerce.

JOHN T. H. is a new member on the sales staff of the Department of H. M. Balesby & Company, New York City.

JOHN T. H. has resigned from his post as Manager of the Baxley Springs Gas Company, which he held for the past six years, in order to accept a position with a Wyoming corporation.

JOHN T. H. Electrical Operating Engineer of the Oil & Electric Company has been elected president of the Exchange Club of Louisville. The annual meeting of the National Association of Electrical Engineers will be held at Louisville in September.

DECEASED

JOHN T. H. senior partner of Henry L. & Company and Vice President of the Cities Company, died suddenly July 11 at his home at 100 West 10th St., New York. Mr. Truitt was in his 60th year at the time of his death.

JOHN T. H. Manager for the West Virginia Coal and Gas Company, Kingwood, West Virginia, died at his home in that city at the age of 60 years.

INCORPORATED

OKLAHOMA. The Colorado Shale Gas Company has been incorporated with a capital of \$2,000,000. Those interested in the venture are M. K. Mills and John S. Porter.

WEST VIRGINIA. *Wheeling.* The Earth Oil & Gas Company has been incorporated here with a capitalization of \$200,000. The incorporators are Lawrence E. Sanderson, President of the E. D. & W. H. Hearne, Thomas K. Hearne of Wheeling and Lee A. Watson of Lakewood, Ohio.

PER CUBIC FOOT-RATES

MISSOURI. *St. Louis.* The Kansas City Gas Company has obtained authority to increase its rates from 80 to 85 cents per thousand in this city.

INDIA. The Miami County Gas Company was instructed in April by the Public Service Commission to reduce its rates to 60 cents per thousand. The company held that the reduction was not advisable and submitted a new rate schedule, which it has agreed to with the local city council. An order is now being issued by the Public Service Commission an application for a writ of mandamus has been filed in the Commission in Supreme Court to compel the gas company to carry out the original orders.

ILLINOIS. The State Public Service Commission has granted the Wells City & Carterville Gas Company permission to increase its rates seven cents per thousand. The increase was allowed to cover a like increase made by the supplying companies.

WEST VIRGINIA. *Charleston.* The Natural Gas Company of West Virginia has applied to the Public Service Commission for authority to increase its rates. The rates now in effect are 40 cents per thousand less a discount of two cents per thousand on a rate of 80 cents per thousand for the first 10,000 and 75 cents for each additional 10,000.

The commission has ordered the company to reduce its rates to 45 cents per thousand for the first 10,000 cubic feet, 40 cents for the next 10,000, 35 cents for the next 10,000, 30 cents for the next 10,000, 25 cents for the next 10,000, 20 cents for the next 10,000, 15 cents for the next 10,000, 10 cents for the next 10,000, 5 cents for the next 10,000, and 0 cents for the next 10,000. The commission has also ordered the company to reduce its rates to 45 cents per thousand for the first 10,000 cubic feet, 40 cents for the next 10,000, 35 cents for the next 10,000, 30 cents for the next 10,000, 25 cents for the next 10,000, 20 cents for the next 10,000, 15 cents for the next 10,000, 10 cents for the next 10,000, 5 cents for the next 10,000, and 0 cents for the next 10,000.

New preferred stock was issued in three classes, the first class being payable in cash and the other two classes being payable in kind. The first class is payable in cash and the other two classes are payable in kind. The first class is payable in cash and the other two classes are payable in kind.

Learn this: Something new and useful every day

of oil from No. 1 on the Capers lease, at a depth of 3,170 feet.

Mexia—The second test of Snowden & McSweeney on the Longbottom lease is said to be making 5,000,000 cubic feet of gas per day.

The J. L. Thompson Oil Corporation in No. 1 on the Thomas tract, has reached a sand at 3,017 feet which is giving excellent gas production with good pressure.

Nocona—It is reported that the Petroleum Producers Company has drilled into good gas production at a depth of 2,780 feet. The location of the well is at a point nine miles north of this place.

Stephens County—The Owenwood Oil Corporation in its No. 1 on the Browning lease is showing indications of production at 2,480 feet.

WEST VIRGINIA—Assessment of the oil and gas companies in the state have been returned as \$128,883,361 as against \$124,321,820 for last year. The more notable changes in assessments are as follows. The greatest increase was that of the United Fuel Gas Company, amounting to \$4,000,000, and the greatest decrease was a cut of \$1,250,000 for the Ohio Fuel Oil Company. The largest assessment, that of the Hope Natural Gas Company, remained unchanged at \$34,350,000. The United Fuel Gas Company is assessed at \$21,000,000; the Eureka Pipe Line Company, \$13,000,000; Pittsburgh & West Virginia Gas Company, \$11,000,000; Columbia Gas & Electric Company \$8,000,000; Carnegie Natural Gas Company, \$5,000,000; Reserve Gas Company, \$8,000,000, and the Ohio Fuel Oil Co., \$3,000,000.

Boone County—The International Crude Oil & Refining Company, after drilling deeper in an old well, known as the Thomas H. Salsbury No. 1, to a depth of 2,305 feet, has made a test and estimates the production to be about 213,120 cubic feet of gas.

In Peytonia district, the Owens Bottle & Machine Company have completed the No. 2 on the T. L. Brown farm through the Big Lime sand and have a 500,000-foot gasser. In the same district the same company has a duster on the Coal River Mining Company tract.

WYOMING—*Rawlins*—A gas line is being constructed by the Rocky Mountain Gas Company, an Ohio

Oil Company property, to connect this city with the Mahoney Dome field. The work is being executed by the Illinois Pipe Line Company.

Riverton—The Producers & Refiners' Corporation is having a gas pipe line constructed from this place to Lander, Wyoming, the contract having been let to the Hope Engineering & Supply Company. R. J. Lindsay of the Hope Company is in charge of the work.

ALBERTA—*Barnwell*—The Canadian Western Natural Gas Company is completing a test for gas in this territory.

Calgary—Arthur A. Carpenter, Chairman of the Alberta Public Utility Board, has been appointed by the Alberta government to make complete investigation of and report on the supply and distribution of natural gas in this province. The investigation is to be made to assist the Supreme Court to pass on matters pertaining to the application filed by the Canadian Western Natural Gas, Light, Heat & Power Company to construct a pipe line from Redcliff to Calgary.

The Illinois-Alberta Oil & Refining Company, section 12-20-3-5, in the Okotoka field, southwest of here, has drilled through two gas sands, one at 2,680 feet and the other at 2,780 feet, the gas developing sufficient pressure to lift the tools 200 feet or more in the hole. The test is being deepened for oil.

Edmonton—The Imperial Oil Company, it is reported, will drill a number of wells in southern Alberta fields.

Medicine Hat—The Community Oil Wells, Ltd., is drilling in Many Island Lake district, operating on gas piped from the No. 1 well of the Medicine Hat Development Company in Snake River.

According to report, the Sarnia Oil & Gas Company will extend its activities to the fields of Alberta, where it is purposed to construct a gasoline absorption plant in the Many Island Lake district, as well as in the Peace River district, northern Alberta.

Viking—The Viking Gas Company, Limited, a subsidiary company of the Alberta Gas & Development Company, has been granted a franchise under which the company will supply gas in this city at a rate of 50 cents per thousand. It is said that the company's

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ributing system will be in operation by the end of year.

ONTARIO—*Kingville*—The Eagle Oil & Gas Company, Limited, is preparing to drill its first well on the Lee farm, South Colchester township, Essex County. Two wells are to be drilled through the Trenton rock.

Del County—The Dover Oil Company has a good well on the Henry farm, near Inglewood. The production from the well is to be piped to Inglewood and immediate farms.

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OCTOBER

GAS INDUSTRY

Progressive Gas Companies Start Conservation in the Field.



**Cooper Four-cycle
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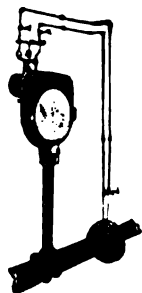
Oil and Gas Engineers throughout the country are advocating the four-cycle gas engine because it will operate on considerable less gas than the best designed two-cycle engines. The direct connected feature with its 20% power saving, the separate mixing valve for each cylinder, the simple and accessible outside layshaft, the efficient oiling systems and abundant water cooling capacity will thoroughly convince you of the desirability of these engines for main line, booster or gas-line station work.

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Company Member of American Gas Association



Thirty Six Years- and Still on the Job

The clunk of our tools is
heard 'round the world,
and the sun ever shines
upon some product of our
industry.

More than a third of a century! Way back in the early 80's this "Oilwell" engine was first put to work. It's been on the job regularly ever since.

The oil industry is only 63 years old—this sturdy "Oilwell" engine has been paying back its cost for more than half that time.

The science of engine building has progressed considerably since this engine was put into use, but the "Oilwell" principle of high quality materials and careful workmanship and inspection has not changed in the least. That is why "Oilwell" products are known literally all over the world for the uniformly satisfactory service which they render.

Eighty branch stores to serve you. Put your problems up to the nearest one or write direct.



OIL WELL SUPPLY CO.

PITTSBURGH, U. S. A.

NEW YORK

SAN FRANCISCO

LOS ANGELES

TAMPICO

LONDON

OILWELL SUPPLY CO

World's Largest Manufacturers of Oil Field Equipment

HEAVY FEET, SLOW HEADS

LOSING EARLIER VITALITY

THE editor of the *Erie Dispatch-Herald* (Erie, Pa.), in a recent issue published the following from his pen. In reading this we were impressed with the very direct description which the editorial portrayed of how many an old established manufacturing concern has gone down in the battle of commercial-activity.

"Heavy of Foot, and Growing Slow of Head" (as the title read) they have lost the battle to newer concerns that have come into the field, or to existing concerns that have brimmed-over with an appreciation of the importance, not only, but the vital need for, "Keeping everlastingly at it" in foul as well as fair weather with their publicity advertising.

A vital error has been made by many a concern in unwisely losing a keen appreciation of the need for unremitting advertising that earlier had, during their so-termed "business-building," been one of the leading means employed to create, and which is as vitally necessary in maintaining ones station in the business field, indeed a kaleidoscopic field, every element in it seeking to bring itself and keep itself in the eye of the buyers of the field.

Many concerns that have been prominent in the field, in fact leaders, have allowed the element of "never let up on advertising" ebb out of their veins, thus sapping their strength, allowing thereby more easily the newer concerns, and other concerns that have not lost their vigor, to push to and keep in, the forefront. The self-complacent ones, those to whom the following words would apply, "He that thinketh he standeth, let him take heed lest he fall," are those who are "Heavy of Foot and Growing Slow of Head." The following is the editorial:

"Miller Huggins, manager of the Yankees, complained much that his team got all the bad breaks in the world's series just ended, but one sport writer said their feet were too heavy and their heads too slow to act.

A lot of people go through life steadily accumulating bad breaks.

They do not appear to realize that anything is vitally wrong with themselves, but lay all the blame of failure to bad breaks and ill luck.

In the case of Miller Huggins' "star" Yankees, they were beaten in fair weather and in foul weather. They were beaten when the ground was good, for heavy feet to get over, and beaten when it was muddy and hence bad for heavy feet.

When the ground was good the heavy feet worked well, but the slow heads were a hindrance, and when the ground was wet, the heavy feet worked badly and the slow heads were poor assistants to the heavy feet.

So they were beaten, as a logical sequence, just as anybody is going to be beaten who allows himself the company through life of heavy feet and a slow head.

Of course, everybody knows the Yankees are a fine ball team, but life is competitive. They had a better team, with lighter feet, and swifter heads, arrayed against them.

They fought hard, but their heavier feet and slower heads, were a handicap in the race for championship that even hard fighting would not overcome. They failed.

Ten thousand men fail in business in competition with a thousand who succeed, because the ten thousand have "heavy feet and slow heads" and have to take all the breaks; whereas the thousand who succeed have light feet and keen heads, which avoid many of the breaks of life, and succeed as the logic of their highly organized business individuality.

This has long been an outstanding principle in the athletic world and it is far more keenly appreciated in the business world than in any age past.

But the man who lays his failure to bad breaks, after he has played out a world's series, and lost in every game, shows a slow head himself."

GAS INDUSTRY

NATURAL GAS EDITION

TRANSPORTATION — GASOLINE PRODUCTION — DISTRIBUTION

SUBSCRIPTION—
\$2.00 IN THE U. S.

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HARRIS S. BIGELOW, Vice-President.

Sworn to and subscribed before me this 28th day of September, 1922.

M. T. McKILLIN.

(My commission expires March, 1924.)

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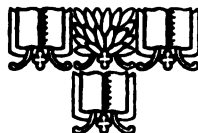
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 Oil City Boiler Wks., Oil City, Pa.
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 Worthington Pump & Mach. Corp., Buffalo.

Yorke Derrick Co., Washington, Pa.
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 Young, Wm. T. Drilling Eng. Co., Oil City.

ANNUAL CONVENTION NATURAL GAS ASSOCIATION OF AMERICA
 and EXHIBITION OF SUPPLY MEN'S ASSOCIATION
 Louisville, Ky., - 1923

FROM THE EDITORIAL MAIL BAG

GAS FILM RELEASED

THE United States Bureau of Mines has announced that "The Story of Natural Gas," produced in co-operation with the Natural Gas Association of America, is now ready for distribution. The film shows the various steps in the development and utilization of natural gas supply, beginning with the drilling of a gas well to the delivery of the gas to the consumer. The picture is interesting and has splendid educational value.

Copies of this picture are available for loan without charge to societies and educational and other institutions, for educational purposes. Requests for the loan of the film should be addressed to the United States Bureau of Mines, 4800 Forbes Street, Pittsburgh, Pa.

CANADIAN NATURAL GAS MEETING

THE Natural Gas and Petroleum Association of Canada held what is reported to have been the most successful annual convention in its history at the Hotel Clifton, Niagara Falls, Ont., on August 31 and September 1. This was the fourth annual convention, the association having been organized in 1919.

At the business session on the afternoon of August 31, reports were received from the various officers and committees. The report of Secretary S. A. Morse showed the association to be in a satisfactory financial position. Reports were presented for the board of directors by P. S. Coate of Chatham and for the laws and legislation committee by H. R. Davis of Buffalo, N. Y.

These reports indicated that the year's work had principally concerned the new legislation in Ontario respecting the natural gas industry, under which the Natural Gas Referee was succeeded by a Board of Reference, comprising three members. Both consumers and producers are represented on this board, the natural gas representatives being Charles E. Steele, President of the Association. The natural gas interests generally regarded the new Natural Gas Act as difficult to operate, but the hope was expressed that the next session of the Ontario Legislature would put through amendments to make it more workable.

Mr. D. A. Coste of Niagara Falls presented the report of the nominating committee, which recommended the re-election of the officers and directors, as follows:

President, Charles E. Steele, Sterling Gas Co., Port Colborne, Ont.; Vice-Presidents, A. M. McQueen, Imperial Oil, Ltd., Toronto, Ont., and P. S. Coate, Chatham Gas Co., Chatham, Ont.; Secretary-Treasurer, S. A. Morse, Union Natural Gas Co., Chatham, Ont.; Directors, Perry A. Little, Buffalo, N. Y.; R. L. Pattison, Chatham, Ont.; H. B. Pearson, Calgary, Alta.; H. W. Braden, Brantford, Ont.; Gordon D. Wickett, Windsor, Ont.; E. P. Rowe, Toronto, Ont.

The recommendation was unanimously adopted. President Steele has held that office since the inception of the Association, in June, 1919.

Windsor, Ontario, was selected as the place of the 1923 convention, the exact date to be determined by the executive.

The first morning of the meeting was spent by the delegates in sight-seeing trips by motor, or on the Lewiston golf course as guests of Mr. D. A. Coste.

At the opening session, President Steele in his presidential address expressed the hope that the new Natural Gas Board of Reference would do better work than he had at first anticipated when invited to become a member. He spoke in approving terms of his colleagues, Chairman D. O. Ellis and Mr. J. W. Ward, the consumers' representative.

C. C. Dean of Imperial Oil, Ltd., gave an interesting paper on "Refining of Crude Oil."

In "The Consumers' View Point," Mr. H. S. Rowley of the Dominion Natural Gas Co. urged that company representatives make an earnest effort to appreciate the consumers' attitude. Following the paper a dramatic interlude was furnished by Reg. Thayer, who, taking by turns the roles of indifferent clerk, angry customer and conciliatory manager, showed how a customer should and should not be handled.

"Natural Gas Distribution Matters" were discussed in a paper by R. B. Kilpatrick of the Windsor Gas Co.; while in "The Conservation Problem," H. R. Davis, General Manager of the Dominion Natural Gas Co., urged that the practical interests of the companies and the consumers be carefully considered in working out conservation policies.

In the ensuing discussion, F. W. James, General Manager of the Union Gas Co., urged the substitution of the term "mineral gas" for "natural gas." The latter had, he held, done much to inculcate in the public mind the false idea that "natural gas" was a product natural in the same sense as air, water and sunshine and to the same extent free to all.

The fourth annual banquet, held on the evening of the first convention day in the Hotel Clifton ban-

Getting ready to will never get it done.

quet room, was the most successful in the history of the Association. Upwards of 110 members and guests were present. An excellent menu was served, followed by a musical and dramatic program, as well as addresses. Ald. John B. Hopkins of Niagara Falls, Ont., welcomed the visitors in behalf of the city. The outstanding feature of the evening program was an address by Douglas Malloch of Chicago on "Some Sinners I have Met." The singing was led by Geo. R. Cummings of Chatham, for several successive conventions the official pepmaster, Mrs. Cummings providing the accompaniments. Reg. Thayer contributed some dramatic numbers. President C. E. Steele was toastmaster of the evening.

NOT A PIPE DREAM

THE big form of a determined man standing to the left in the quartette appearing in our reproduction of a photograph of a train-load of gas-pipe, is that of M. M. Sweetman, Vice-President and General Manager of the Southern Natural Gas Company with offices in City National Bank Building, San Antonio, Tex. Next to Mr. Sweetman stands Charles K. Sweetman, a worthy son of a worthy father, and next in line, F. A. Hornaday, President of the company with his also worthy son, Tetty A. Hornaday, standing at the opposite end of the quartette from Mr. Sweetman.

Locomotive No. "31" of the S. A. U. and G. Railroad should also have honorable mention in view of the fact

The Hope Engineering Company of Mount Vernon, Ohio, was awarded the contract through Mr. Sweetman for constructing the line, while the pipe is the product of Youngstown Sheet & Tube Company, of Youngstown, Ohio, the same being billed to Mr. Sweetman, he appearing as the central figure in this large transaction.

The pipe laying was commenced on August 28th, twenty-two miles of pipe having been shipped for this line before the Tube Company closed down on July 24th, with shipments re-begun August 29th; from the latter date to September 15th thirty-three cars of pipe had been shipped, twenty-four miles of pipe had been laid, leaving forty miles still to be constructed, a total of 64 miles of twelve-inch and four miles of sixteen-inch.

Those who know Mr. Sweetman are well acquainted with his ability to "sit tight", and also are well acquainted with that broad chin which denotes firmness, decision, and determination, the four elements that have made for Mr. Sweetman's success in this matter, against opposition that would have floored many another man.

In a letter from Mr. Sweetman lately received, we learn that the Southern Natural Gas Company has lately purchased a most promising gas field, forming an addition to their former holdings. It is known as the Gas Ridge Field and contains 8,000 acres of proven gas territory. "This field is about eight miles in length," says Mr. Sweetman, "and from it the company purposes to supply gas to the federal government for use at Kelly Field No. 1 and Kelly Field No. 2, which are intermediate flying stations, gas to be also supplied to Camp Normoyle, and the village of South San Antonio. There will be a surplus of gas, and this will be sold to the



FIRST TRAINLOAD OF PIPE FOR SIXTY-FOUR MILE PIPE LINE OF SOUTHERN NATURAL GAS COMPANY.

that this sturdy craft drew this trainload of pipe destined to convey that wonderful natural product, namely, natural gas on its way to a population of about 21,000 domestic consumers at the present time, with a natural gas of 10,000 to 12,000 within the span of twelve months to come.

The train photographed is the first to bring pipe for this line to Whitsett, Texas. The line will convey natural gas from McMullen County to San Antonio.

San Antonio Public Service Company for distribution in San Antonio."

We have for years personally known Mr. Sweetman. His dealings have ranked him among those who are known as of the worth-while type. He has not been a puller-down, not a destructionist, but in whatever direction his hand has taken a leading part it has been in line with up-building and progress. He is one of the men who stood foremost some years since in gathering

Efficiency is hard work intelligently applied.

the governors of natural gas states together for the purpose of accomplishing greater conservation to supplant the tremendous waste of this natural fuel, which was recognized as deplorable and yet continued.

The Youngstown Sheet & Tube Company have met their obligations set forth under the contract, not only in the matter of time of deliveries, but in quality of product, while the Hope Engineering Company have been putting the work through with their usual promptness, and their ability to execute after a satisfactory as well as a speedy manner.

THE PUBLIC PRESS AND GAS

TO indicate how willing the *public press* is to print matter that is handed the newspapers as "news", we reprint an item from a daily newspaper of recent date. Gas interests have been slow to take advantage of such opportunity, and too many of the gas items have been, as written, frankly speaking, "puffs," not "news." It takes a clever writer to create a "news item" out of that which is purely commercial, yet it's done, and if the gas interests were "up to snuff," as the expression goes, they would oftener get before the public in city newspapers. The item referred to reads as follows:

STANDARDIZED BURNER FOR DWELLINGS WOULD SAVE BILLIONS IN GAS BILLS

(Universal Service)

WASHINGTON, Sept. 2.—Consonant with Secretary of Commerce Hoover's national standardization program, the United States Bureau of Standards is conducting tests in the development of a standardized gas burner for dwellings, with which it is aimed to save millions of dollars' worth of fuel annually in American homes.

There is special interest in the subject at present in view of the coal strike, the fuel shortage resulting from which it is expected will cause the use of gas instead of coal in hundreds of thousands of homes.

Dr. S. W. Stratton, chief of the Bureau of Standards, said today:

"In the discussions at the Natural Gas Association convention, recently held at Kansas City, in which the bureau took part, it was brought out very forcibly that poor gas service is often due to lack of standardization and improper piping of houses.

"It was strongly urged that the gas association cooperate with municipal authorities to bring about improvement in this respect. Part three of the bureau's national gas safety code covers this matter very fully, and every effort will be made to get this part of the code in acceptable condition for adoption by municipalities.

"As a result of a questionnaire sent to the Health Departments of a number of large cities, numerous responses have been received, giving the status of their regulations governing the use of gas.

"Considerable time has been spent during the past month by experts of the Bureau of Standards in making examinations in consumers' homes of the completeness of combustion of gas when used in ranges having detachable tops. Many of these devices appear to be very dangerous to health, and the bureau considers a thorough research on this subject to be of great importance.

"Tests are being conducted on burners submitted by five manufacturers of gas appliances, and reports will be prepared on the results of these tests as soon as they are completed."

LOCATION OF CARBON BLACK PLANTS

IN contemplating the construction of a carbon black plant, definite information should be obtained on several subjects, states the U. S. Bureau of Mines in Bulletin 192, just issued. Matters that should be given consideration are the distance from a railroad or a navigable stream; State laws; the depth of wells; the thickness of gas-bearing strata; gas pressure; gasoline content, and whether the gas is casing-head or dry gas; amount of proved territory; history of field; drilling practice; location of field in regard to possible large gas-consuming centers; distance from trunk pipe lines for the transportation of natural gas; open-flow capacity of wells on prospective gas leases, and tests on the richness of gas to ascertain the approximate quantity of carbon black procurable per thousand cubic feet.

Probably the most beneficial line of improvement of present commercial methods for the manufacture of carbon black lies in changing the design of the plants so that the cost of construction will be diminished, according to the Bulletin. The control of the supply of air should be regulated more efficiently and provision should be made in the design to render plants independent of weather conditions, especially of winds. Thermal decomposition probably offers the most promising method of increasing the quality of black from natural gas. The present methods are destructive to the apparatus—a defect that undoubtedly can be overcome—and the resultant product contains grit or adamantite carbon, is grayish, and contains some volatile matter.

In the present methods of manufacture, carbon black is made by burning natural gas with a luminous flame against a metal surface and then collecting the liberated soot. The process produces from ½ pound to 2 pounds of black per 1,000 cubic feet of gas, or 1.5 per cent. of the total carbon in the gas. The industry consumes about 40,000,000 cubic feet of gas annually in the United States.

Realize this: Today is the tomorrow you worried about yesterday.

Oil Shale Industry

*Progress Made by One Corporation in Placing the Oil Shale Industry Upon a commercial basis.
In This Article is Described the Brown Retort Which is Used at the De Beque, Col.,
property of the Index Shale Oil Company*

By FRANK E. SHEPARD, President,
The Denver Engineering Works Co.

THE Index Shale Oil Company, of Denver, Colorado, has erected on its property about fifteen miles from De Beque, Colorado, a well equipped plant including The Brown Fractionating Shale Oil Retort, which with the present equipment installed will have a capacity of 250 to 300 tons of oil shale rock treated in 24 hours.

as well as their occurrence and location for economical treatment.

A large number of experiments and installations have been made on various designs of retorts and condensing systems for the eduction and fractionating of the shales and considerable progress has been made toward a practical solution, but it is said that to the Index Shale Oil Company belongs the distinction of demonstrating through a practical plant a large capac-



PLANT OF THE INDEX SHALE OIL CO., DE BEQUE, COLO., MOUNT INDEX IN BACKGROUND.

Power and rock crushing capacity is now available for a capacity of 500 to 600 tons of shale rock during 24 hours and provision is made for extending the retort and condenser capacity.

During the last twelve years Government and State organizations have made extended investigations and have demonstrated the existence of a great resource in the oil shales of western Colorado, eastern Utah and southern Wyoming, and while large deposits of oil shale exist in other parts of United States and throughout the world, Colorado, Utah and Wyoming are particularly favored in the richness of the shales

ity and the commercial eduction and the fractioning of the shales into various products in one operation.

The De Beque District, Colorado, is particularly favorable for the economic handling of the shale rock from the shale beds to the crushing and retort plant, as the cliffs rise from 1,000 to 2,000 feet above the surrounding country and benches along the bases of the cliffs form convenient sites for the crushing and retort plants with ample fall below for the condensing plants and the delivery of the various products.

A favorable grade for railroad facilities exists from De Beque along the valleys adjacent to the escarp-

He who is afraid to train an understudy is not big enough for his job.—Taga.

ments of the large number of streams. Sufficient quantity of water is available for the requirements of the crushing and retort plants and the Colorado River will furnish a large supply for any future needs of auxiliary processes for the treatment of the great variety of by-products.

The Index Shale Oil Company plant is located at the base of Mt. Index, formerly known as Mt. Blaine, on a bench conveniently related to the large mass of slide shale rock which has fallen from the large cliffs of oil shale, also in favorable relation to the main bed of oil shale rock, which stands exposed for over a thousand feet above the plant site. At present the plant is operating on the loose slide rock, which exists to the amount of hundreds of thousands of tons of oil shale rock, and repeated operations have demonstrated that a conservative estimate of the amount of oil pro-

Blake crusher, thirteen inches by thirty inches jaw opening, driven from the main power plant. Large storage bins of 500 tons capacity both above and below the Blake crusher are provided for the storage of coarse and crushed shale within the crushing plant buildings.

The crushed shale, nominally three-to-four-inch diameter ring, is delivered automatically from the crushed ore bin to the Brown Fractionating Shale Oil Retort, of which there is one retort installed at the present time having a capacity of 250 to 300 tons during 24 hours. Space is provided in the present retort building for a second retort of the same capacity specified and with a simple extension of the retort buildings. Additional space will be provided for the third and fourth retorts, which will provide an ultimate capacity of at least 1,000 tons during 24 hours.



Main Portion of Plant of the Index Shale Oil Co., showing where shale is delivered by tramway into upper storage bin, from which it passes through crusher into lower storage bin, thence into automatic feed and through retort. (A) Upper storage bin. (B) Crusher house. (C) Lower storage bin. (D) Engine room. (E) Retort.

duced from the shale would be 100 barrels of oil from 100 tons of oil shale rock.

The boiler plant includes a horizontal type of boiler with oil fuel equipment, making use of the fuel oil fractions from the operation of the retort and condensing plant of the Index Company. The usual equipment of auxiliary machinery for the boiler plant is provided and an electric light plant is installed with oil engine for the illumination of the crushing, retort, condensing and laboratories departments as well as boarding and living quarters.

A short haulage system is provided for present operations, to deliver the shale rock from the loose slide of shale to the crushing plant, which includes a

The Brown Retort consists of a horizontal rotating cylinder, about thirty inches diameter, such cylinder being constructed in three sections of twenty-four feet length for each section, making the total length of the retort seventy-two feet.

A helical lining of the cylinder conveys the shale from the feed end of the retort to the discharge end.

The retort is made in three sections, each section being driven separately by belt and geared transmission, so that the revolutions of the different sections of the retort may be varied to suit the conditions of the reduction operation.

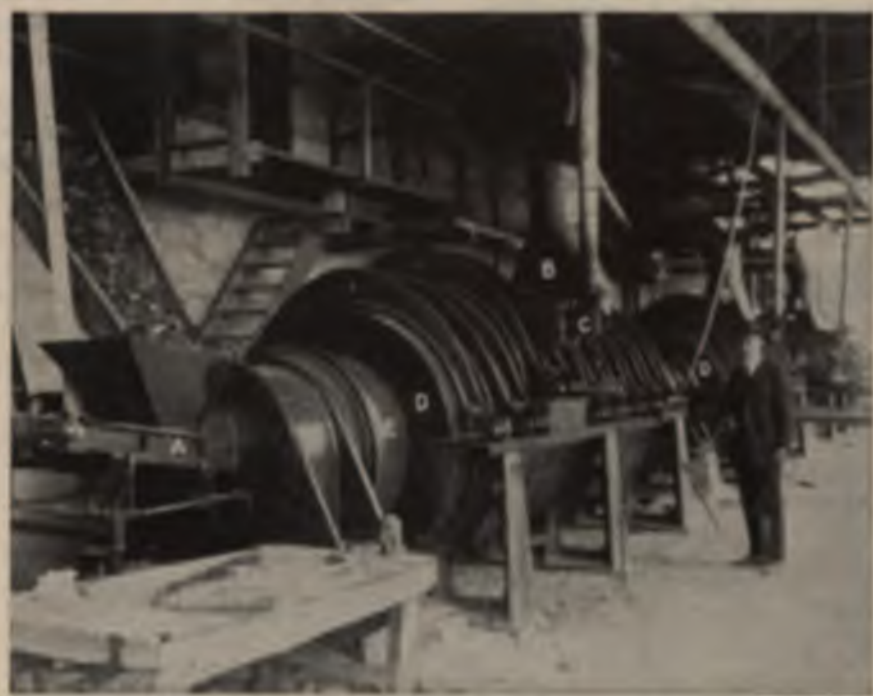
Surrounding each horizontal cylinder section is a firebrick-lined furnace for heating the cylinder, with

Opportunity comes to the worker, not to the idler who is waiting for opportunity to come.—Store Chat.

oil burner, so that each cylinder section heated to different degrees of heat adapted to the various products. The degree of temperature in each section is determined by suitable valves, so that a careful and accurate regulation

is provided to meet the requirements of a flexible retort system.

From the discharge end of each section of the cylinder proceeds an exhaust pipe to the inlet opening of a motor driven suction fan and the delivery pipe from



The Brown Retort. Showing at left the large metal shell being fed into retort. (Mr. Brown, the inventor, at right.) (A) Automatic feed. (B) Pipe conveying exhaust heat to boilers. (C) Oil burner for heating furnace. (D) Furnace surrounding retort. (E) Receiving retort.



BROADSIDE VIEW OF RETORT.

Showing the three sections with furnaces and exhaust pipe from discharge end of each section. Brown Retort, Index Shale Oil Co., De Beque, Colo. (A) Automatic feed. (B) Pipe conveying exhaust heat to boilers. (C) Oil burner for heating furnace. (D) Furnace surrounding retort. (E) Receiving retort. (F) Exhaust pipe conveying gases to condensers.

established for the elimination of different range of speeds and temperatures is pro-

this exhaust fan leads to a series of six air condenser tanks in which the various fractions of oils and other products are precipitated. Gases are exhausted from

You get cheerfulness out of life in proportion as you put cheerfulness in.—The Policy.

the discharge end of the second section of the retort cylinder through a similar exhaust fan and the retort products are delivered to a second series of six tanks for precipitation of the second series of products. In the same way gases are exhausted from the discharge end of the third section of the retort cylinder and through a third exhaust fan to a third series of six condensing tanks for the precipitation of a third series of products.

Thus, during the operation of the eduction of gases from the shale rock in the retort, there is produced with the present equipment eighteen different fractions of products. By a suitable development of the condenser system a larger number of products may be produced and by means of variations of temperatures and speeds within the retort, a wide range of operations may be accomplished.

rock over a suitable screen, the sand rock in its coarser form will be separated from the shale rock residues.

From an inspection of this retort during operation, there was no sign or evidence of agglomeration or clogging inside the cylinder of the retort and the mechanical details are such that any expansion of the cylinder sections are amply provided for.

Throughout a wide range of tests the Brown retort gave no evidence of undue stress nor abnormal conditions from the furnace temperatures.

In other systems of treatment for the oil shales it has been thought necessary to crush the shale rock to material as fine as one inch or one-half inch diameter; but the Brown retort demonstrated the ability to handle and treat pieces of large diameter as quoted



Some of the Eighteen Condensing Tanks. Total Capacity, 53,000 gallons.
Plant of the Index Shale Oil Co., De Beque, Colorado.

A noteworthy fact in the operation of the Brown retort, is the ability of the retort to handle pieces of shale rock as large as five and six inches diameter and even slabs of shale rock as long as ten or eleven inches, six or seven inches wide and one and one-half to two inches thick, then conveying these comparatively large pieces through the retort and by the time the material reaches the discharge end of the retort, the material is reduced to a size which will pass through a ten or twelve mesh screen opening.

No attempt is made to sort out the sand rock or quartz rock, for they will pass through the retort and be discharged with the residue from the shale rock. If the sand rock be impregnated with any desirable products, the retort will educt such products and deliver the rock to the discharge of the retort. Then by passing the mass of shale rock residue and any sand

and deliver the residue from the discharge end of the retort in sand sizes.

There is no question as to the many advantages of the horizontal Brown retort over the vertical types of retorts from the ability of the horizontal retort to thoroughly turn over and disintegrate the shale rock inside the retort cylinder and from the large evaporative surface produced there is allowed a prompt elimination of the gases without any tendency to condense such gases on the upper cold layers of shale rock such as exists in the vertical types of retorts.

The various deposits of oil shale rock may require equipment to meet the different relations of shale rock deposits and the conveying of this material from the slide or cliffs to the plant, but the Index Plant clearly demonstrates that in the Brown Fractionating Shale

Think twice before you decide to "lay low" with your business.—Shur-on Chronicle.

Oil Retort, exists a practical machine, of large capacity, simple in design, requiring small power and with a flexibility to meet the varying conditions of shale deposits and adapted to a wide range of products.

It seems strange that vast resources like these oil shale deposits should remain so many years awaiting development. Here stand mountain ranges with quantities of valuable materials which will probably last for ages and is it not time for business ability and engineering skill to devote all their energies to the upbuilding of this great enterprise.

—*Commonwealth Red Book, Denver & Rio Grande Western R. R. Co.*

That is just as true of a man who sells his services as of a man who sells something he makes. It is a fundamental policy for every laborer, foreman, clerk, storekeeper, farmer, lawyer, mechanic, manufacturer, wholesaler and captain of industry in America.—*The Herd.*

COMMITTEES OF NATURAL GAS ASSOCIATION

COMMITTEES to carry forward the work of the Natural Gas Association of America during the year 1922-23 have been appointed by J. D. Creveling, President of the Association. They are as follows:



Where the Spent Shale is Discharged. (G) Tailings Elevator.
(H) Shale Retort and Sand Rock.
(Note: Automatic Conveyor to be Installed.)

GOODWILL

GOODWILL in business is a recognized asset. In many instances the goodwill of a business has been valued at more than the combined worth of stock, factory and equipment, and it is right that it should be so, for the material assets can be quickly replaced, but goodwill is a matter of slow growth.

But what is goodwill? How is it gained?

According to a manufacturer whose goodwill rates high among his assets, it is gained in this way:

1. By letting people know you have something.
2. By convincing them that they need it.
3. By putting it where they can get it more quickly, easily and economically than anything else of its kind they might get.
4. By making and keeping them so glad they have got it that they prefer it to anything of a similar nature that there is to be had.

If the ordinary business gait is too slow for you, why not get ahead of the procession?—*Guide Post.*

Standardization Committee: H. C. Cooper, chairman, Hope Natural Gas Company, Pittsburgh, Pa.; E. D. Leland, Equitable Gas Company, Pittsburgh, Pa.; T. R. Weymouth, United Natural Gas Company, Oil City, Pa.; Dan C. Hayne, Kansas City Gas Company, Kansas City, Mo.; H. D. Hancock, Empire Companies, Bartlesville, Okla.; F. L. Chase, Lone Star Gas Company, Dallas, Texas; T. H. Kerr, Ohio Fuel Supply Company, Columbus, Ohio.

Publicity Committee: H. J. Hootet, chairman, Cincinnati, Ohio; N. C. McGowan, Shreveport, La.; R. W. Gallagher, Cleveland, Ohio; Larmour Adams, Erie, Pa.; George W. Ratcliffe, Pittsburgh, Pa.; George A. Kinley, Hope Natural Gas Company, Pittsburgh, Pa.; B. R. Bay, Empire Companies, Bartlesville, Okla.; Alfred Hurlbert, Equitable Gas Company, Pittsburgh, Pa.

Committee on Electrolysis: F. M. Towel, New York, N. Y.; T. R. Weymouth, Oil City, Pa.; S. S. Wyer, Columbus, Ohio.

Eighty-Three Years Service

*Public Service in Louisville, Ky., Based Upon Sound Fundamentals, backed
by Excellent Plants for Supplying Demand*

THE Louisville Gas & Electric Company has recently completed a period of eighty-three years of keeping faith with its customers, providing service at all times and enlarging and extending its plant through the years, ever keeping pace with the growth of the city whose public servant this corporation considers it a privilege to be.

The company now serving the city of Louisville is a direct successor of the original gas company in that city, which was one of the earliest plants built in this country, having been established in 1838. In 1913 H. M. Byllesby & Company effected a consolidation of the various electric and gas companies operating separately in Louisville, and these now represent the properties and public utility plants known under the name, Louisville Gas & Electric Company.

The plant equipment now operated by the company is modern and fully adequate to take care of the growing demands upon it for some time to come. While the company is distributing natural gas, the demands upon its source of supply in periods of extreme weather in the winter are such as to make it necessary to have in reserve a store of natural gas, for which seven gas holders are provided having a total capacity of 4,800,000 cubic feet, as well as two gas manufacturing plants. The latter have a manufacturing capacity of 8,000,000 cubic feet per day, and are kept in constant readiness during the winter months to supplement the natural gas supply which comes from fields in West Virginia and Eastern Kentucky. The natural and manufactured gases have been successfully blended for these

peak load demands in winter, and the blended gas is furnished consumers at reasonable rates.

Natural gas service in Louisville dates from 1913, when the Louisville Company through a subsidiary company built a 12-inch pipe line across the state of Kentucky and brought to the city natural gas product in West Virginia. The company has a large acreage under lease undeveloped and partially developed in the State of Kentucky, these fields being held in reserve with the object of providing natural gas for some years to come. There are five distinct fields thus reserved to the company for its future needs. The company has restricted the use of natural gas for domestic purposes, and it is not now available to replace coal under boilers or for industrial consumption on a large scale.

We are publishing an interesting chart showing the gas output of the company since 1914, when the total was 1,422,453,000 cubic feet, up to the present year, during which it is estimated the output will reach a total of 3,900,000,000 cubic feet, an increase of 1,477,547,000 cubic feet in eight years.

The electrical manufacturing plant operated by the company takes its place for efficiency close to the head of a comparative list of such plants operating in the country. The plant at present has a generating capacity of 63,500 horse-power; it is equipped with the latest and most approved types of labor and time saving machinery. To make sure of fuel supply at all times and at the lowest cost, the company owns



ONE OF THE COMPANY'S GAS MANUFACTURING PLANTS

When an unpleasant task lies ahead of you, get it behind you without delay.—Factory News.



CANNON'S LANE NATURAL GAS PRESSURE REDUCING STATION

and operates a coal mine at Echols, Kentucky, 115 miles southwest of Louisville. A fleet of twenty-five all steel coal cars of the hopper bottom type is a part of the company's equipment to insure against interruption of coal transport during periods of car shortage.

The population in Louisville served by the Louisville Gas & Electric Company is estimated to be something over 314,000, while electricity is furnished as well to the local utilities in New Albany and Jeffersonville over the state line in Indiana, representing a population of 33,000 outside of the city of Louisville.

The Louisville Company is in the utility business to please the public, and the spirit of service is fostered and conveyed to its customers through a carefully trained staff numbering no less than 500. The company holds that success can be attained in public utility service only by avoiding controversy and

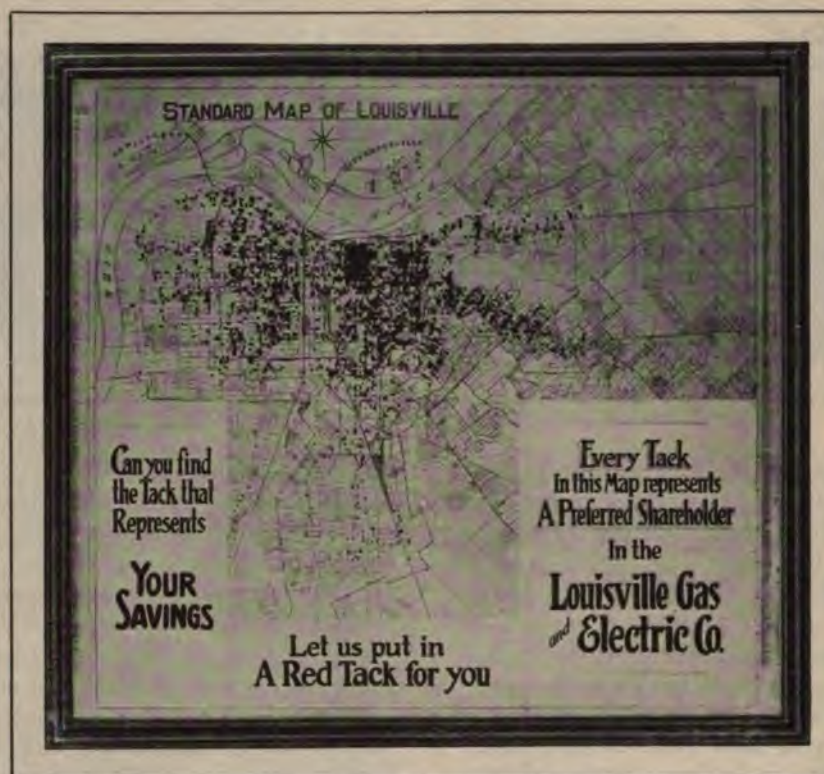
political entanglements; by taking the public into actual financial partnership, by striving for efficiency, economy, fairness, and courtesy, by enlargements and extensions to meet the public requirements, and by seeking fair and reasonable earnings through a large volume of business with small profit on units of service. Surely a worthy creed of a worthy organization.

In line with its belief in customer ownership of utility securities, the company has sold its bonds largely to its customers, and according to a recent report there are 3,500 citizens who are shareholders in the company, receiving dividends regularly. Customer ownership came into vogue with the company in 1919, since when the company's Investment Department has offered securities direct to customers, a partial payment plan making the investment very popular with those who prefer this mode of payment. We are publishing among our illustrations also a map of



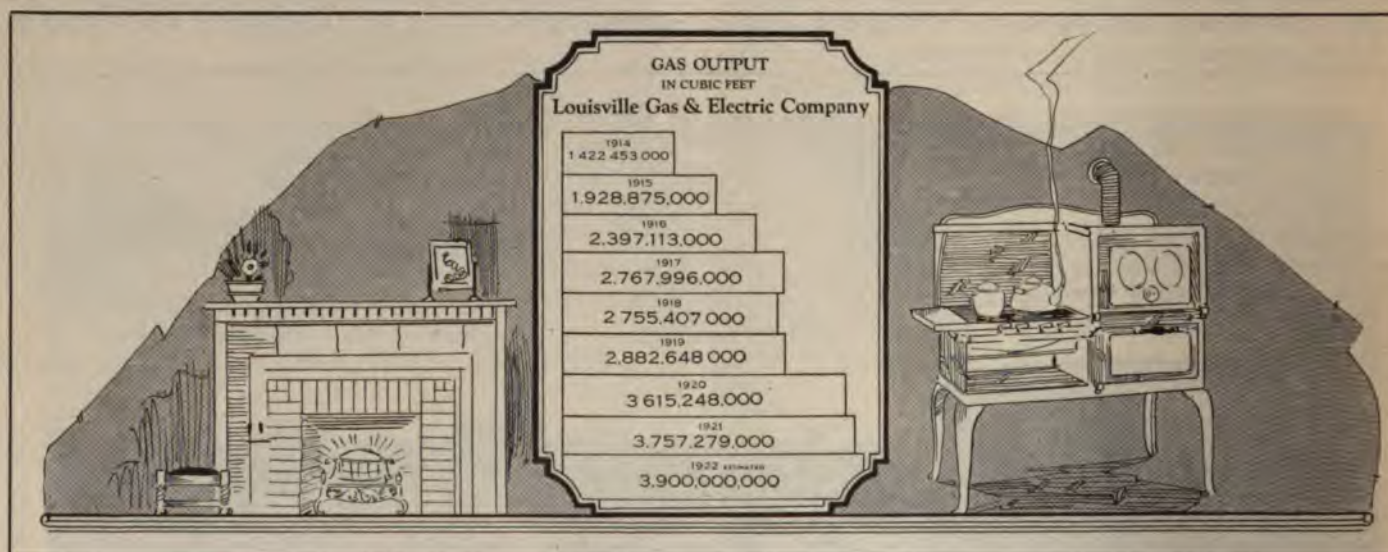
SOME OF THE GAS HOLDERS KEPT FILLED FOR EMERGENCIES

If you would pick the flowers of opportunity you must sow the seed of initiative.—"A Booster."



Louisville made interesting by designating tacks, each of which represents a preferred shareholder in the company. The map shows how thoroughly comprehensive the distribution is throughout the city.

We are enabled to present to our readers these facts concerning one of the country's "up-and-doing" public utilities, through the courtesy of H. M. Byllesby & Company.



PRODUCTS OF COMBUSTION OF GAS STOVES

TESTS made at the Pittsburgh, Pa., experiment station of the Bureau of Mines, relative to the products of combustion of gas stoves using natural gas, show that a flame burning so that air has free access gives practically no carbon monoxide. When the flame is inclosed so that air

does not have free access, considerable carbon monoxide may be formed. It is proposed to test a gas log and bathroom inclosed heater in which the flame burns in a perforated metal tube. A steam radiator, which uses an attached gas fire to develop steam and on which an absorbent for removing fumes was attached, produces no aldehydes and only .04 per cent. carbon monoxide was present in the room air when the flame went out.

Bet on the "talker" for the first heat, but put your money on the doer for the race.—Mason's Monthly.

W. Virginia Oil and Gas Meeting

*Sixth Convention of West Virginia Organization Shows Growth in Membership
and Power in the State*

THE West Virginia Oil & Natural Gas Convention recently held its annual convention at Clarksburg, West Va., with more than one thousand in attendance. Among this number were counted many who hold executive positions high in the big corporations of the industry, and many who are occupied in field work, roustabouts, drillers, etc.

Secretary Robinson was "on the job" early and late, and had firm hold of all details and arrangements, the perfection of which made the convention a very decided success. This was the sixth convention held by the West Virginia organization,—a very husky newcomer in the field of concerted effort and activity.

A sumptuous banquet which took place in the Masonic Temple the evening of the first meeting day was by courtesy of several of the big supply companies throughout the country. This was a delightfully informal affair, no speeches having been planned. Its purpose was simply the promotion of good fellowship and getting acquainted. The entertainment consisted of several vocal numbers.

On the program for the convention sessions were the following papers:

"Field Office Accounting and Preparation of Reports in the Field," E. B. Nutt, general auditor, Hope Natural Gas Company, Pittsburgh; "Natural Gas of West Virginia," Dr. J. B. Garner, Pittsburgh, of the Mellon Institute; "Deep Well Drilling in West Virginia and Pennsylvania," Dr. I. C. White, state geologist, Morgantown; "Refining and Marketing Oils," E. M. Tharp, publicity director, Pure Oil Company, Columbus, O.; "Practical Field Work Construction," R. J. Crabbe, field superintendent, Pittsburgh and West Virginia Gas Company, of Weston; address, R. L. Welch, of New York, general secretary of the American Institute.

The sessions were under the conduct of H. A. Wallace of Charleston, President of the Association. The welcoming remarks were made by Harrison G. Otis, City Manager.

Mr. Wallace in his President's address said in part:

"The West Virginia Oil and Natural Gas Association has become the largest organization in the state

of men engaged in common industry. It stands for law and order, for good schools, good roads and the advancement of everything that is for the benefit of the commonwealth. The membership of this association is made up of real West Virginians, for ninety-five per cent. of the men engaged in the oil and gas business in the state are native West Virginians, which is a greater percentage than that of any other industry in the state where thousands of men are employed. There are over 20,000 men engaged in the oil and gas industry in this state. It has long been a well known fact that there is no substantial friction between employer and employe in our work in the State of West Virginia, and I believe this is due to the fact that the men are good American citizens, who believe in the square deal and who are intelligent enough to appreciate the problems which are to be solved during periods of prosperity and periods of depression, and are willing to assist each other in solving them, to the common advantage of all. In the majority of companies the officials today are men who have worked from the bottom up and who understand the difficulties of their employes and are willing at all times to settle troubles in an amiable manner, and I believe I can safely say the men have endeavored to be fair to the companies in every case that has come up during these troublesome times."

"The decline in the available supply of natural gas has practically more than offset the decrease in prices of material and labor. Due to the depression, resulting in decreased consumption of refined products, it was necessary for the oil companies to curtail operations, resulting in a production of approximately 250,000 barrels of oil less in 1921 than in 1920. The production of natural gas in 1920 was approximately 220 billion cubic feet, and in 1921, 165 billion cubic feet, or a decrease of 55 billion cubic feet. In the year 1921 the valuation placed on the oil and gas companies in the State of West Virginia by the Board of Public Works was \$123,819,734, and the taxes amounted to \$2,257,767.95; or, in other words, our industry is paying about one-fourth to one-fifth of all the state taxes. These figures, you will note, cover only the property assessed by the Board of Public Works. The large and small oil producing companies and the individual producers of oil and gas and refineries are assessed by the local assessors, which probably makes the total return to the state double that given above as rep-

Be your own efficiency expert by doing your job the best way it can be done.—Forbes.

representing only the properties assessed by the Board of Public Works.

"In 1921, there were, in West Virginia, 134,372 domestic and 1,367 industrial consumers of natural gas. The domestic consumers use 19 billion cubic feet of gas and the industrial 28 billion cubic feet."

William H. Thompson, of Columbus, Secretary-Treasurer of the Ohio Gas and Oil Men's Association, was then introduced and read a paper on "The Relation of the Public to the Gas Industry." He expressed the belief that the relations existing between the public utilities and the public generally are very much improved, and urged that the policy of developing good will where it does not now exist be followed.

Other papers presented were "Practical Oil and Gas Geology," by J. French Robinson, Chief Geologist for the Hope Natural Gas Company and former Assistant State Geologist of Pennsylvania.

A moving picture of much interest was shown at one of the sessions. It showed the famous "dry-hole" on the I. H. Lake farm which was put down 7,579 feet, at a cost of over \$150,000 to the Hope company, but which never yielded a dollar's worth of "pay." The film also showed a location in Gilmer County where the Hope Natural Gas Company penetrated a difficult mountain location, hauled heavy pipe and equipment over eighteen miles of mountain roads and brought in a well.

Another film shown at the convention pictured the manufacture of hemp cordage used in the oil industry, from the growing of the hemp to the use of the product on the operation. This film was provided by the Columbia Cordage Company.

Officers elected for the year 1922-23 are as follows: B. F. Robinson of Clarksburg, President; James H. Dye of Charleston, Vice-President, and Edwin Robinson of Fairmont, Secretary-Treasurer (re-elected). Directors named were: Patrick McDonough of Parkersburg, E. L. Keller, H. A. Wallace and Ira G. Sayre all of Charleston.

The outing of the Hope Natural Gas Company and the Reserve Natural Gas Company, an annual event of large proportions and great popularity, was arranged to fit in with the closing of the convention of the West Virginia Association. The event took place at Norwood Park, and it is said that close to 10,000 persons, practically all of them company men and their families, participated in the fun. Many of the delegates to the convention stayed over for the outing and swelled the number. A great program of field sports was arranged and heartily joined in. One of the big events was the tug-of-war, the prize for which was a silver loving cup offered by Superintendent J. J. Evans. The cup was won by the Kanawha district team, which also, won it last year, while in 1920 it was captured by the Lewis district, Reserve team.

The John B. Corrin prize for the district winning the highest number of points went to Harrison with 445 points. This prize was a marine clock which will be placed in the district office of the Reserve Company at Wilsonburg. J. Percy Davies is foreman of this district.

Scores made by other districts: Fink, 330; Kanawha, 135; Mannington, 135; Shirley, 125; Clarksburg, 60; Lewis, 40.

Handsome prizes were offered for all of the sports, and were hotly contested for.

Those who had the plans for the event in hand were as follows:

F. P. Barbour, chief of the right of way department of the Hope and Reserve Companies, was chairman of the Athletic Committee; Howard D. Graham, assistant Geologist for Hope Company, official score keeper; E. Vernon Smith, clerk. The judges were: I. D. France, L. G. Kincheloe, C. C. Reed, H. M. Gee, William McClellan, all of Clarksburg, T. J. Jones of Mannington; Percy S. Haslett, Parkersburg; C. M. Fleming, Parkersburg; J. J. Logue, Weston.

R. C. Brown, assistant chief civil engineer for the Hope and Reserve companies, was general chairman of the Picnic Committee. Joseph G. Mallory was vice-chairman; Thomas Miller, treasurer.

ILLUMINATION STANDARDS

Illuminating Engineering Nomenclature and Photometric Standards Approved

THE American Engineering Standards Committee announces that the Illuminating Engineering Nomenclature and Photometric Standards of the Illuminating Engineering Society, 1918 Edition, have been approved by the A. E. S. C. as "American Standard," with the substitution of six internationally agreed upon definitions for certain ones of the 1918 rules. The definitions which have been reworded are: Luminous flux, luminous intensity, illumination, candle, lumen, and lux.

The special committee of the A. E. S. C. which examined the proposal submitted by the I. E. S. and which recommended approval of the nomenclature and photometric standards included representatives of the U. S. Bureau of Standards, the American Gas Association, the American Physical Society, the International Acetylene Association, the Optical Society of America, the American Institute of Electrical Engineers, the Illuminating Engineering Society, and the National Electric Light Association.

So long as human beings continue to reach up for stars the world will go ahead.—Faith.

New text to be substituted for existing text in Sections 3, 8, 9, 10, 12 and 13 of the Nomenclature and Standard Rules, Illuminating Engineering Society, 1918 Edition.

Section 3—Luminous Flux is the rate of flow of radiant energy evaluated with reference to visual sensation. Although luminous flux must strictly be defined as above, it may be regarded for practical photometric purposes as an entity, since the rate of flow is for such purpose invariable.

Section 8—The Luminous Intensity of a point source in any direction is the flux per unit solid angle emitted by the source in that direction. (The flux from any source of dimensions which are negligibly small by comparison with the distance at which it is observed, may be treated as if it were emitted from a point.)

Section 9—Illumination at any point of a surface is the luminous flux density at that point, or, when the illumination is uniform, the flux per unit of intercepting area.

Section 10—The unit of Luminous Intensity is the International Candle, such as has resulted from international agreement between the three national standardizing laboratories of France, Great Britain and the U. S. A. in 1909.

This unit has been conserved since then by means of incandescent electric lamps in the laboratories which continue (or remain) charged with its conservation.—Foot Note. These laboratories are the Laboratoire Central d'Electricite, Paris, the National Physical Laboratory, Teddington, and the Bureau of Standards, Washington.

Section 12—The Unit of Luminous Flux is the Lumen. It is equal to the flux emitted in a unit solid angle, by a uniform point source of one international candle.

Section 13—The practical unit of illumination is the Lux. It is equal to one Lumen per square meter, or it is the illumination at the surface of a sphere of one meter radius due to a uniform point source of one international candle placed at its center.

As a consequence of certain recognized usages, the illumination can also be expressed by means of the following units:

Using the centimeter as the unit of length, the unit of illumination is one lumen per square centimeter, and is called the Phot. Using the foot as the unit of length, the unit of illumination is one lumen per square foot, and is called the Foot-Candle.

Watering the Lawn once won't keep it green the rest of the year. Advertising once won't make any noticeable difference in the annual profits.—*Teamwork*

GAS COMPANY HELPS IN SAFETY WORK

WHEN the Kiwanis Club of Oklahoma City, Okla., recently conducted a "Safety Week," the Oklahoma Gas and Electric Company came forward and gave its strong support to the movement.

Newspaper space was purchased and an advertisement inserted, which we are reprinting herewith. It contains valuable safety information in connection with the use of gas and electricity, such as every one should be familiar with.

In addition to publishing the advertisement, the Company's Securities Department delegated A. A. Brown and T. D. Turner, to deliver addresses in the public schools during the campaign.

BE CAREFUL With Gas and Electricity

When handled carefully and properly, gas and electricity are your best friends. But they are dangerous if treated carelessly.

Every year some persons in the United States are injured or killed by natural gas, or killed or badly disabled by electricity—all because they did not observe the proper precautions.

For the benefit of Oklahoma City consumers of gas and electricity, and to assist the Oklahoma City Kiwanis Club in their campaign to free the public from deaths and accidents due to preventable causes, we make the following suggestions:



Some Safety First "Don't's"

GAS

- 1—Don't assume that the odor will warn you of escaping gas. Natural gas is almost odorless.
- 2—Don't use a lighted match to look for leaks. Soap suds applied to the pipe will show bubbles.
- 3—Don't have gas in an unenclosed room, or use a water heater in the bathroom, unless they are equipped with safety or vent pipes.
- 4—Don't gas rubber hose connections. They are developing leaks and are frequently caused by dirt.
- 5—Don't have gas burning in the house when you are asleep, or while you are away from home.

ELECTRICITY

- 1—Don't use power as a fence plug. This is a frequent cause of fire.
- 2—Don't switch on a light while standing on a bath tub, or while your hands, feet or clothing are wet.
- 3—Don't assume that because a cord is insulated it is invulnerable. Damaged cords will cause a fire. Do not permit your children to climb down light poles or wires.
- 4—Don't attempt to do your own electrical repairing. Always have an expert do it, and be sure.
- 5—Don't neglect to call National 8000 when you see a house or factory with no light wires.



SAFETY FIRST

This Space Donated by the Oklahoma Gas & Electric Co.

That these safety-first drives are thoroughly worthwhile and mean a great deal in the preserving of human life and health is attested by the fact that in Oklahoma City accidents due to carelessness have been greatly reduced as a result of the drive that we have described.

The man who can, but doesn't, must give way to the man who can't, but tries.—*Empire Paper News.*

Gas-Fired Furnaces

*Brass and Bronze Castings Made Using Furnaces Fired
With Gas as Fuel*

BY EDMUND L. SPANAGLE

SINCE the time when man's progress brought him to the stage in his development where he began to have personal property he deemed worthy of a better hiding place than a cave or a hollow tree trunk, locks have apparently been a necessity. Crude indeed were the first locks, and from the Egyptian period down through the ages, locks were all of the round key type, the size of the key being in proportion to the size of the lock and the thickness of the door. Up till 1846, when a man named Butterworth invented the first combination lock, the bank locks in use were all of the key type. In 1864, however, Mr. James Sargent, one of the founders of the present Sargent and Greenleaf Company, invented a simple device known as the Micrometer with

which it was possible to pick and combination lock then in use. Mr. Sargent toured the country demonstrating this device, spending his spare moments perfecting a combination lock which defied even his Micrometer.

In 1865 the Sargent and Greenleaf Company was established, and began the manufacture of Mr. Sargent's combination lock, which was quickly adopted by the leading safe makers and the U. S. Treasury Department. A short period of comparative security followed, but the boldness of burglars soon created the necessity for some other method of protection, and from this demand grew the time-lock. In 1874 Mr. Sargent sold and personally attached on the vault door of the First National Bank of Morrison, Illinois, the first time-lock ever used in this country, and subsequently gave the world numerous other inventions in the field of locks. (It is interesting



REMOVING A CRUCIBLE FROM THE FURNACE PREPARATORY TO POURING THE METAL.

Enthusiasm is the outward evidence of inner faith and belief.—Hengerer Mirror.

that this first time-lock is still in use.) As is the case with new inventions, bankers were slow at the time-lock, but reliable statistics show that there are today about 50,000 time-locks in use in the States and Canada. The Sargent and Greenleaf Company are kept busy manufacturing not only time-locked bolt actuating devices, but also all kinds of bank and locking devices, such as sub-treasury locks, vault locks, inside safe and vault door locks, gate locks, safe locks, safe deposit locks, and combination locks. In addition to the various types of bank locks, they make a complete line of hardware locks, indoor locks, door and window bolts, trunk, chest, and box locks, padlocks, auto tire and robe locks, cabinet locks, elevator locks, and various prison cell and corridor locks.

line separate lines extend through the three Ratiometers and to the gas burners on each furnace.

The furnaces are of the round pit-type, constructed for the use of No. 30 crucibles, the furnace chamber being 14 inches in diameter by 14 inches high. The walls consist of a 2-inch special moulded Carbofrax lining, backed up with $4\frac{1}{2}$ inches of arched firebrick and $2\frac{1}{4}$ inches of Nonpareil insulating brick—all of which are inside of a No. 11 gauge steel drum. This drum sets on a firebrick foundation about 3 feet square and 16 inches high. A space large enough to hold an old crucible is provided in the front part of the foundation and there is a $2\frac{1}{2}$ -inch hole in the floor of the furnace chamber through which slag and spilled metal can run down into the old crucible. This arrangement furnishes a means of completely recovering all metal spilled in charging or



POURING THE MOLTEN METAL INTO MOUNTS IN THE PROCESS OF MAKING CASTINGS FOR SARGENT AND GREENLEAF PRODUCTS

a careful study and analysis of the requirements of the business, the Sargent and Greenleaf Company to install gas-fired furnaces for the melting of their foundry. The selection of gas instead of fuel was primarily for economic reasons as the cost of the entire gas furnace installation amounted less than the cost of constructing a brick stack to be necessary draft for the firing of coal. Besides economic advantage, the use of gas, it was seen, to away with the nuisance and dust of handling of ashes, and would insure ease of control and safety, irrespective of weather conditions, continuity of supply, decreased metal loss through oxidation and increased production with the same labor cost.

A gas-service pipe to supply these furnaces enters the foundry building at the boiler room where the gas valves are set. From the meters a 4-inch fuel line runs to the foundry, being suspended overhead from the ceiling as shown in our illustration. From this fuel

through breakage of a crucible in the furnace. Metal lost in this manner in a solid fuel fired furnace is taken away in the ashes.

There are two small flue openings in the wall of the furnace lining near the top, through which the burned gases are led to the wrought iron pipe recuperator-stack. The recuperator-stack consists of a 4-inch pipe inside of a 6-inch pipe. The hot gases from the furnace pass up through the inside of the 4-inch pipe, while the air for combustion passes down through the space between the 4 and 6-inch pipes, and is thereby preheated before entering the burners. Each furnace is equipped with two No. 4-L safety burners having a combined capacity of 200 to 1100 cubic feet of gas per hour. The burners are set in the lower section of the furnace chamber on a tangent to the circle midway between the inside of the furnace wall and the outside of the crucible. The air supply to each furnace is furnished through McKee pressure blowers directly connected to one-fourth horse

is attracted by truthful advertising, and trade remains where service proves satisfactory.—Silent Partner.

power motors. Each furnace is also equipped with a Ratiometer for the automatic proportional mixing of the gas and air, thus giving a one-valve control and eliminating the need for experienced operators.

This foundry produces all of the brass and bronze castings required in the manufacture of the various products made by the Sargent and Greenleaf Company. The castings, in general, are small and light, their weight varies from that of the smallest key plug, of which it takes eighty to weigh one pound, to the quadruple time lock case which weighs 11½ pounds. This class of castings is probably the most difficult type of casting to pour, as it requires that the metal be at an exceedingly high pouring temperature. The metal used for their bronze castings contains definite percentages of copper, zinc, tin and lead. The melting points of this bronze is approximately 1900° Fahr. and, as used in this foundry, the pouring temperature is 2200° to 2300° Fahr. A typical charge consists of 32 pounds of copper ingot, 2 pounds of tin, 1 pound of lead, 15 pounds of bronze chips, 11 pounds of heads from the previous heat, 8 pounds of scrap brass and 27 pounds of gates, or a total of 96 pounds. From such a charge, an average of about 55 pounds of good castings are obtained. The gross metal loss when melting bronze was found on test to vary from three-quarters of one per cent to one and one-half per cent of the total metal charged, as compared with a loss of 3 to 4 per cent usually found in the operation of coal or coke fired furnaces. This unusually low metal loss can be said to be chiefly due to the absolute combustion control furnished by the Ratiometer. The Ratiometers are set so as to automatically produce a slightly reducing atmosphere in the furnace chamber, and this atmosphere is maintained under all rates of gas consumption.

When the foundry is operating at full capacity, the work of weighing and charging the metal into the three furnaces, adjusting the rate of gas consumption so as to have the metal ready to pour at the proper time, and pulling and skimming the crucibles is handled by one furnace man and a helper. The furnaces are lighted about seven o'clock in the morning, or thirty minutes before the moulders start work, the first heat requiring from 90 to 110 minutes. Thereafter a crucible of metal can be taken from each furnace every 60 to 75 minutes. Six to nine heats are obtained from each furnace per day, depending upon the type of castings the moulders are working on and the demand of the moulders for metal. By operating the three furnaces to capacity, enough metal can be melted to pour the moulds set up by six or seven moulders.

The new foundry can produce 5,000 pounds of castings per week of 5½ days, operating three gas furnaces with the employ of a foreman, two operators, six moulders and one helper to cut the castings from the gates. In the foundry at the former plant the normal production per week of 5½ days was from 2,200 to 2,300 pounds of castings with a foreman, two helpers and four to five moulders, each moulder attending to his own coal-fired

furnace in addition to setting up moulds. It is evident, therefore, that the production per employee in the new foundry is approximately fifty per cent over what it was in the old foundry.

To date the Sargent and Greenleaf Company has been operating its new foundry for eighteen months. They are well satisfied with the results being obtained from these furnaces. The castings which are being produced are of a very high quality, equal to, if not superior, to those produced in any foundry using any other fuel for the melting of the metal. The gas consumption is reasonable, considering the composition of the metal melted, the weight of the charge and the type of castings produced. The life of crucibles in which the metal is melted has varied from 20 to a maximum of 42 heats, with an average of about 30 heats per crucible. The Carbofrax linings, which were installed a year ago, are still in use and their condition seems to indicate that they will be good for some months to come. Taking proper consideration of everything—labor, metal, fuel, crucibles, maintenance, and overhead, this new foundry is producing castings at a lower unit cost than was ever attained in the foundry at the former plant. No small part of the credit for this decreased cost can be attributed to the gas furnace installation. In any furnace installation, the necessary requisites where efficiency is paramount are that the furnaces can be run to the complete satisfaction of the owner financially and otherwise and to the physical comfort and ease of the furnace men. To these ends we have striven and we believe that we are safe in saying that we have accomplished what we set out to do originally.—*Courtesy Rochester Gas & Electric Corporation.*

STATE COMMITTEES ON PUBLIC UTILITY INFORMATION

NATIONAL STATUS AS OF JUNE 1, 1922

Organized and Operating

- Illinois, H. M. Lytle, Room 829, 72 West Adams Street, Chicago, Illinois.
- Indiana, John C. Molett, Hume-Mansur Building, Indianapolis, Indiana.
- Kentucky, L. B. Herrington, Kentucky Utilities Co., Louisville, Kentucky.
- Michigan, Alfred Fischer, P. O. Box 394, Ann Arbor, Michigan.
- Missouri, J. B. Sheridan, 3725 N. Broadway, St. Louis, Missouri.
- Nebraska, Horace M. Davis, 527 Bankers Life Building, Lincoln, Nebraska.
- Ohio, Benjamin E. Ling, 901 Illuminating Building, Cleveland, Ohio.
- Oklahoma, O. D. Hall, Room 117, 1st National Bank Building, Oklahoma City, Oklahoma.
- Wisconsin, Frantz Hergid, 91 Mason Street, Milwaukee, Wisconsin.

People and pins are useless when they lose their heads.—Sweets and Smokes.

Georgia, Paul Warwick, 50 National City Building, Atlanta, Georgia.

New England, Joseph B. Groce, 24 Milk Street, Boston, Massachusetts.

Rocky Mountain, Geo. E. Lewis, 302 Gas & Electric Building, Denver, Colorado.

Iowa, Joe Carmichael, 310 Crocker Building, Des Moines, Iowa.

Washington, N. W. Brockett, 203 Electric Building, Seattle, Washington.

Texas, Geo. McQuaid, Magnolia Building, Dallas, Tex.

New York, Frederick W. Crone, Room 3052, Grand Central Terminal, New York, N. Y.

Tennessee, Ross Murphy (No address as yet).

The latest states to join this rapidly growing movement are Washington, Texas, New York and Tennessee.

NATURAL GAS ASSOCIATION COMMUNICATION

THE Natural Gas Association of America has issued a communication to all company members as an initial move to be of assistance in the way of obtaining priority rights in the matter of shipping pipe and other accessories for gas lines. Immediate co-operation by the companies who are members of the Association will facilitate greatly the work the Association has undertaken in the present transportation situation. The communication reads as follows:

"Dear Sirs:

It is observed that some of our members have experienced considerable inconvenience pending deliveries of materials due to the present transportation and coal crisis. Service Order No. 23 of the Interstate Commerce Commission gives priority to shipments of coal for public utilities, electric light plants, etc., live stock, food stuffs, etc., and whereas pipe and other accessories, for instance, are placed fifth on the list, it is quite obvious that gas for fuel purposes is just as essential in many instances and will relieve the fuel shortage as much as coal or any other fuel where available.

"The Associated General Contractors of America, Inc., and the Sand and Gravel Producers have succeeded in securing modification in the service order referred to, and it is the writer's belief that we would be entirely justified in asking the commission to include pipe and other accessories for gas lines in their priority list No. 1.

"Will you please advise what experience you have had, and whether or not, in your opinion, we would be justified in asking for such modification which would, no doubt, be granted? It would be well to indicate in your reply any individual instances in which you have or are experiencing difficulties at the present time, and this office will be pleased to render any possible assistance.

"It is the consensus of opinion of those well informed on transportation conditions that from the middle of September on, the car shortage and congestion will increase from day to day until the peak is reached, possibly several months hence, and it appears to be quite essential that we take some very strong action immediately to protect our interests.

Yours very truly,

WM. B. WAY,
Secretary."

DESIGNING AND BUILDING TRUCK BODIES

GEORGE B. HISTED

ONE of the many diversified activities of the General Construction Department of this Company is the building of truck bodies for Company cars. The type of construction of a truck body depends upon the chassis dimensions, capacity and the special service for which it is to be used. Body designs are carefully worked out on the drawing board, complete assembly and detail drawings being made for all bodies constructed, showing the dimensions of the various materials used in their construction. Three types of bodies turned out recently are shown in the accompanying illustration. Figure 1 shows a new type of trailer car adapted for use in hauling large loads of poles, pipe, etc. The chassis for this trailer was purchased from the United States Government and was built for special war service in the Aeroplane Division. The disteel wheels are capable of carrying tremendous loads, and the platform or body built for this chassis was designed to support a large load of concrete poles or other heavy equipment from 25 to 50 feet in length which from time to time this Company has to transport. This trailer has an extension tongue adaptable to the length of the load it carries. For lighter loads, a smaller trailer which answers ordinary requirements is used.

Figure 2 shows one of the three new patrol cars. These patrol bodies are mounted on Essex chassis and are especially built to accommodate the varied array of trouble equipment which a patrol car has to carry. Patrol cars travel about during the night searching out trouble and are therefore built to handle emergency work with reasonable speed and are thus required to be more flexible than the more cumbersome coke trucks shown in figure 3. The large loads of coke which the trucks have to handle day in and day out require bodies of unusual strength and durability. They are therefore built of oak and well reinforced with iron to withstand the rough usage to which they are continually subjected. The heavy oak floors of these coke trucks are entirely covered with iron sheeting which protects them considerably. However, the necessity for using water to sprinkle the coke and eliminate the dust, causes truck floors to disintegrate before they would if used under more favorable circumstances. Even so, a coke truck floor lasts normally about three years.

The question is not one of doing more, but of doing better.

This Company saves a considerable amount on each coke truck body it builds in its own shops and the lack of suitable space in the carpenter shop is the only obstacle preventing all our truck bodies being "home made" at present. All of these bodies shown were made and assembled complete at the carpenter shop, the large coke truck body being built out-of-doors in the yard. After being placed on the chassis, each body was sent to the paint shop of the General Construction Department which is located in the Bantleon Building at North

Water and Franklin streets. Here they are carefully painted after which they are turned over to the Transportation Department for service. Good rolling stock is an essential with a corporation giving the public efficient service along diversified lines, and it is the aim of the General Construction Department to turn out Company equipment entirely adequate to the brand of public service the Rochester Gas and Electric Corporation seeks to render to its patrons.—*Courtesy Rochester Gas & Electric News.*



Auto Truck Bodies Recently Built by the General Construction Department. Top, New Type of Trailer Car for Extraordinary Loads of Pipe. Center, Car used by Night Patrol Men. Lower, A Three Ton Coke Truck.

Talk success and act like success. Whistle and work, sing and serve.—Silent Partner.

A Matter of Service

Teaching the Correct Utilization of Natural Gas

ELLEN S. E. WARREN

National Educational Project, Natural Gas Company

Educational Department of The Peoples Natural Gas Company, Pittsburgh, Pa., was organized in June, 1921. It was organized for the benefit of the consumer, and every effort is both to teach the correct utilization of natural gas and to create good fellowship between it and the consumer.

per advertising while it has its advantages, make the appeal to the consumer that personal eye. In fact many housewives are too busy with advertisements in the daily papers, or circulate. The interests of the producer and of the consumer are identical. The greater the measure of satisfaction service to the consumer, the greater the benefit to the public in the welfare of the utility, and realizing, as it never has before, the value of public cooperation and support.

to house campaign would be impractical so the women's clubs, civic organizations, and church organizations as the only logical means of reaching the people. Women's clubs are an excellent means of spreading information. However, a large number of women are thus brought into the results of the educational work. Much time has been spent in teaching the basic principles to the school child. By teaching the child, the education is not only being educated but correct information on the subject of utilization is being put into every home in the community. It is a very old who does not talk at home about what he has learned particularly if it is something different from his regular routine.

The Superintendent of Public Instruction saw the need not only the pedagogic but also the economic work, and gave permission, with his recommendation, to carry this work into any public school of the city. After the conference with Dr. Finnegan, heads of departments of Geography, Science, Civics and Economics were met and these gave promise of cooperation. The Director of Geography has incorporated this work into her study and all teachers of the fourth and sixth grades in the city will be required to present it during the coming year.

During the past year some time has been spent in the city of Altoona, Pa. Wonderful cooperation was extended by the Superintendent of the Altoona public schools, who recommended by letter, the work to the principals and asked their hearty cooperation. The principals, however, displayed a certain amount of skepticism about the interest of the child in the subject and they felt that their interest could not be held over thirty minutes. In one instance, in particular, discussion in the eighth grade lasted one hour and forty-five minutes, and the writer was recalled the third time to answer questions of the children brought up by the "follow up" work of the teacher.

Excepting in a few cases, the educational work is not carried below the fourth grade, and the length of period varies from thirty minutes to an hour and one half. The subject matter is the same for all grades, but the detail which is used in working out the subject depends upon the age and the intellectuality of the children.

Upon request, the subject for discussion is not announced and the question, "What did your mother use in cooking your breakfast or lunch," immediately sets the child to wondering and thinking. The Socratic, or question and answer method of teaching is used entirely in the work. This method keeps the child alert, his mind active, and gives him something to do, to say nothing of keeping the instructor on the alert and ready for any question that comes up.

Some teacher in each building will usually ask, "Does not this work get monotonous, saying the same thing over so many times a day?" Monotonous? NO. Interesting? YES, very. The same thing is not said at every meeting, of which there are sometimes twenty a week, but the same information is left with the children. The blackboard is used extensively, for a sketch, however crude, conveys ideas to the mind of the child far better than verbal description.

The first introductory question is, "What did your mother use in cooking your breakfast?" The answer, "GAS," is invariably given. By a series of questions about other things, the fact that gas is a family name is brought out, also, in this family, there are two brothers, Natural and Manufactured, one made by nature and coming from the ground, and the other made by man and most of it made from coal. Some boys are taken to describe the discovery of "coal gas," then simply, and you might say crudely, the various operations of the utility are followed. First the source of the industry, second the

One of the best things a salesman can learn is how to make a long story short

forming of a company, raising money for the operations, leasing or buying the land and machinery; third, transporting it to the field, building the derrick, drilling the well, chances of dry wells, cost control; fourth, discussion of rock pressure and how the gas gets to the surface of the ground; and, fifth, piping, compressing, distributing and utilizing the gas in the home. Industrial gas is not mentioned.

As the first instrument that the gas goes through in the home is the meter, the mechanism and purpose of that is discussed. "What is the meter for?" "It is to tell how much is used, or is it to tell how much must be paid?" There is a vast difference sometimes in these two statements. Here again, from things that are common in the life of the child, but apart from the gas industry, the possibility of leakage and the wasteful use of the fuel, through inefficiency of the appliance and careless use, are brought out. The only way they know, apparently, of finding a gas leak is by the use of a lighted match. Because of the danger of such practice and the possibility of injury to the individual, the detection of leaks by the soap suds method is stressed. Various types of heating stoves, the use of gas in appliances built for the use of coal, jacketing the hot water tanks, lighting, and cooking appliances are discussed.

The child, to be interested, must have something to do. Do not tell them what someone else can do, but what they can do themselves. They cannot raise the burner always, but they can clean it and adjust the mixture for complete combustion, which they judge by the color of the flame.

In what direction does heat travel?

What kind of a top on the stove, solid or one with holes in it, will let the heat reach the kettle first?

The correct answer to these two questions are evident.

A meter tally is left in each building and with that and the aid again of the blackboard all are taught to read a meter. From two meter readings and the actual rate for the gas in the town a monthly bill is calculated. Calculations are made before the pupils of the cost of the same amount of work a month done with manufactured gas. These two examples are the basis for splendid practical arithmetic work. Each child receives a Pennsylvania Primer on the correct use of natural gas and each teacher is supplied with a complete set of charts and bulletins to aid her in her "follow-up" work.

Through the influence of the principal, or the teachers, a number of the parent-teachers' meetings have included the educational work in their programs. A stove, in operation, having both low set and raised burners, and the various types of tops in use in the community, a house meter, specially designed with a glass top, front and back, so that the question of "How does the meter work?" can be easily explained; a manometer and pressure regulator to show that, with proper adjustment, the cooking appliance is not useless at low pressure, comprise an exhibit used for adult meetings. Many parents,

having their interest aroused in the subject by the information brought home by the child, many times show considerable surprise not only at the accuracy of the information but also at the comprehension of the subject by the child. They surely do get accurately the "high points" of the program for better utilization.

The following are samples of pertinent questions which are almost invariably asked:

1. What makes the meter run faster in winter, when we don't have any gas, than in summer?
2. What makes the gas freeze up in the winter?
3. Why is there more air in the gas at one time than at another?
5. Why do the companies pump air into the gas?
6. Why is my bill so much bigger than Mrs. J. when I don't use as much as she does?
7. Why haven't we been told how to burn gas correctly?
8. Why haven't they told us this before?
10. Why don't those who sell and set up our stoves tell us how to adjust them?
11. Can you show us how to practice these things in our kitchen?

When there is evidence of such indisputable interest in the matter pertaining to the public utility of natural gas, there is surely some justification why the natural gas public utility companies should engage in educational propaganda.

CABINET RANGE INVADES ENGLAND

THE following is a reprint of an item appearing in "Gas", a contemporary published in London, England:

"'A Woman's Dream House', is the title of an illustrated article on domestic economy in the 'Westminster Gazette'. The ideal kitchen specially is described. Cooking will be done by gas. But the gas cooker will not be down on the floor, making a back-breaking stoop necessary each time the door is to be opened. The latest type of cooker is to be used. The oven is to be at one's own level—whatever that may signify—with a small glass window, so that the contents may be seen without unnecessary opening and shutting of the door. Nothing is said about an automatic 'baster' for the joint, but as the door must not be opened this may be assumed. The grilling, frying and boiling rings will be at the side of the oven. It all reads very nice, but it would be much more convincing if it were seen in operation. Dream houses often prove to be as described."

Save this: A bit every day for sixty.

A Silver Wedding

*Dean of Instantaneous Automatic Water Heating
Is Given Ovation*

MR. EDWIN RUUD, whose name has become famous through achievement, a widely known name indicative of comfort, convenience and health, twenty-five years ago began the manufacture of storage and instantaneous water-heaters, since which time the Ruud Manufacturing Company has become a wonderful institution, of which company Edwin Ruud was the founder.

Mr. Ruud was born in Asken County, Norway, June 9th, 1834. He came to America in 1880. In seven years after landing he became a citizen of the United States. In education his was of the same general type as that

of the machine-tools which from the states were imported into Sweden, and upon some of which he worked. His landing in this country was at the age of twenty-six; his asset being a thorough knowledge of mechanical engineering, and an acquaintance with the practical as well as theoretical side; also he possessed the degree of "Mechanical Engineer". In the States Mr. Ruud's first business stroke was the accepting of a position as machinist, with William Sellers of Philadelphia, a name that has stood for many, many years as indicative of "nothing better" in machine tools.

In 1882 the Pennsylvania Railroad Company claimed Mr. Ruud's services at the Altoona shops in Pennsylvania, shops from which some of the most noted mechanical and supervising talent has been turned out that this country has ever known. In 1885 he gained further experience and in other fields; he took a position with the Reading Iron Works at Reading, Pa., an institution then and now widely known, and one which at the present is supplying pipe to the gas interests in this country. Mr. Ruud remained with this company until 1887.

Having gained with these several institutions, a very broad and valuable experience, he in 1887 changed his base, accepting an offer from the Westinghouse interests in Pittsburgh. Here this young, promising, and able young man found wide scope for his ability. In the employ of Mr. Westinghouse he was assigned to the Fuel-Gas and Electric Engineering Company where he assisted Mr. Westinghouse in designing and developing a Gas Producer, along with various gas consuming appliances for various purposes. All of this led to the producing of the first automatic gas water-heater which, as we are told, was manufactured in 1888-89, the first patents issued being 1890 and 1891.

Various of the appliances that were here attempted, including the Gas Producer, did not measure up to expectation, and later the then known Fuel Gas and Electric Engineering Company was turned into the Pittsburgh Meter Company, which had before it a large field, since natural gas was coming into its own by leaps and bounds and which company has measured up to its possibilities. It fell to Mr. Ruud's lot at this time to develop a small proportional meter, thus further giving him experience in gas matters. Next the developing of the Westinghouse gas engine came under Mr. Ruud's hand, again adding to his already large fund of information and knowledge in the line of fuel-problems.



EDWIN RUUD
President Ruud Manufacturing Company

enjoyed by many boys of the same period, nothing unusual, excepting that having finished the three "R's", as the expression goes, "reading, 'riting, 'rithmetic", he chose to proceed along the lines of mechanical engineering, and graduated with a diploma from Hortens Technical College, a government educational institution.

In Stockholm, Sweden, he was employed in machine works, there devoting himself to the practical side by making up a regular line of machine works practice. Mr. Ruud was attracted to the United States by the excel-

Do your work better than anyone else could do it—that is the margin of success

Mr. Ruud was very close to Mr. George Westinghouse, traveling with him on various trips of equipment and appliance investigation, and through whom Mr. Ruud met many leading engineers whose names are well known throughout the mechanical world.

Later, as Mr. Westinghouse did not feel especially interested in the water-heating and water-distilling appliances that had been undertaken in the Westinghouse shops under Mr. Ruud, the latter bought from Mr. Westinghouse the patents that had been issued upon these types of devices in the name of Mr. Ruud, but that he had assigned to the Westinghouse Company, paying for the same \$380.00.

We are told that at about this period James Hay, who was then a prosperous plumber in Pittsburgh and Edwin Ruud became acquainted and it was in the shop of Mr. Hay that the first "Ruud" water-heaters and water distillers were made, although Mr. Ruud remained with the Westinghouse interests, devoting only his spare time as "advisor", in the water-heating and water-distilling matters at the Hay shop.

The fact is brought to the fore that the first water-heaters produced by the James Hay Company, under the Edwin Ruud patents, were marketed under the trade-name "Pittsburgh Water Heater".

Later, in 1897, a company was formed, and was given the name of the present large manufacturing interest, namely, the Ruud Manufacturing Company. The selling-force was composed of a single salesman, with two on the office-force, thus the outlet end of the business was composed of three people, but indeed that force was sufficient, for although two distinct types of heaters were being made, namely, the Automatic-Storage-System, and the Instantaneous-Automatic-Water-Heater, the trade did not seem to appreciate their worth, and therefore sales were slow.

In these years gone by, Mr. Ruud has amassed a fortune, his company has been exceedingly successful, and his name like that of "Welsbach" in the gas lighting field, all must acknowledge, is at once thought of when the water heating field in which he has operated, is mentioned.

An anniversary book has been produced by the Publicity Department of the Ruud Manufacturing Company. It is a very beautiful affair, and while telling of the history of Mr. Ruud's career, it likewise tells in pleasing detail, of the various water-heater lines of manufactures now in this silver anniversary year produced by the company.

On Thursday, September 28th, the Ruud Company held one of the most attractive banquets at the William Penn Hotel in Pittsburgh that has been staged at that fine caravansary, this in honor of Mr. Ruud, while likewise in his honor similar "Ruud" anniversary banquets were held at various points throughout the country, and upon the same date. Thus the sales-force of the company, now running into large numbers, all had the privi-

lege of celebrating the Twenty-fifth Anniversary on that notable date, September 28th.

The toastmaster at the banquet held at the William Penn Hotel was Mr. C. E. Bartlett, President of Bartlett & Company, Inc., Philadelphia, agents for the Ruud Manufacturing Company. The speakers were Mr. S. T. Cameron, of Washington, D. C., S. S. Robertson, of Pittsburgh, F. A. Lemke, of Kalamazoo, H. S. Humphrey of Kalamazoo, and Gordon S. Rentschler of Hamilton, Ohio.

A wonderful growth has been the outcome of these twenty-five years from two on the office force, and one on the sales force, in 1897, to the present army of clerks and representatives. The company is now doing an extensive export business as well as covering the great domestic field of the United States.

Were it our privilege, we would place before Mr. Ruud a victor's wreath, but as we cannot do so in a material way, we would do the equivalent, namely, applaud him for the splendid work accomplished, and wish him and Mr. Hay, years of time in which to further contemplate the most prosperous and excellent outcome which has been for some period past, and is now being guided by the directing hand of A. P. Brill, whose watchfulness has resulted in the grasping of many an opportunity for his company, and whose efficiency has become widely known in the industry. We doff our cap to Mr. Ruud, Mr. Hay and Mr. Brill, and as well to the company's most efficient Publicity Department head, who has so ably "put the product across", in public print.

BUSINESS PSYCHOLOGY

SUPPOSE, Ed, the Gen. Soup wants a pumper. Why all he has to do is let the applekants walk rite in hiz offus an az they kums in he says "Good Mornin'." If enny uf the apps looks around fur a seat and then sits down before he anfers why rite off the Gen Soup knows he is a A 1 pumper and hires him.

Or maybe he wants a driller. Why all he does after finding out the number uf beats per minute his heart pounds and whether he chews Mail Pouch or, not, iz give him a Daily Drillin Repoart to mak out, an if you kan read it after he gets thru why the Soup knows he aint no driller, and if he kant why he hires him.

Fur an A 1 rousterbout why just ask him if he knows whose country W. Va. iz an if he sez "God's Country", why classify him rite off az a genuine rouster.

Uf koarse Ed, sum jobs kan be filled a gud deal eazier than this like a warehouse clerk ur a field clerk. In kase wun uf the same is needed why all you haz to do iz go get wun from the state insane asylum, but there are lots uf jobs which aint so easy filled.—Pure Oil News.

Many a man who punches a time clock lives to wear a full jewelled chronometer

AROUND THE BELT

New Wells, New Pipe Lines, New Contracts, Addresses and Extensions. A Fund of Valuable News Gathered for the Journal Through Many Sources.

TRADE PERSONALS

Mr. D. L. Treasurer of the Oil Well Supply Company, Pittsburgh, on August 25th was tendered a dinner by the officers of the company, in honor of the completion of Mr. Brown's thirty-fifth year of service with the company.

Mr. F. S. of the Chatham Gas Company, Chatham, at the annual convention of the Natural Gas and Petroleum Association of Canada, was re-elected a Vice President of the organization.

Mr. Wm. L. is now Superintendent of Production of the Ohio Fuel Supply Company's Sugar Grove, Ohio.

Mr. P. M. recently was elected President of the Gas Appliance Company, Washington, D. C.

James H. of Charleston, West Va., was elected President of the West Virginia Oil & Gas Association at the recent annual convention of that body at Morgantown, West Va.

Mr. W. B. Pittsburgh Sales Manager of the Oil Well Supply Company, attended the Natural Gas Convention at Clarksburg, W. Va.

Mr. J. V. of the Union and Dominion Natural Gas Co. of Ontario, Canada, has been visiting the Journal of the United States.

Mr. Carter, has been appointed Chief Inspector of the Ohio Fuel Supply Company, with headquarters at Columbus, Ohio.

Mr. A. M. of Imperial Oil (Ltd.), Toronto, has been re-elected a Vice President of the Natural Gas and Petroleum Association of Canada at the recent annual convention of that organization.

Mr. E. F. has been appointed geologist of the Imperial Oil & Gas Company, with Southern Oklahoma as his field of operations.

Mr. S. A. of the Union Natural Gas Company, Columbus, Ohio, was re-elected Secretary-Treasurer of the Natural Gas and Petroleum Association of Canada at its recent annual meeting of that body.

Mr. B. F. of Clarksburg, West Va., at the annual convention of the West Virginia Oil and Gas Association, was elected President of the organization.

Mr. Edwin, has been re-elected Secretary-Treasurer of the West Virginia Oil and Gas Association.

Sargeant, E. L., has been appointed Superintendent of the Oil Division of the Ohio Fuel Supply Company at Greendale, Ohio.

Stevens, E. G., has resigned from his connection with the U. S. Geological Survey and is now engaged in valuation work on oil and gas properties for the Bureau of Internal Revenue.

Steele, Charles E., of the Sterling Gas Company, Port Colborne, Ont., has been re-elected President of the Natural Gas and Petroleum Association of Canada.

Todd, E. M., has resigned as Purchasing Agent of the Owen-Orange Oil & Gas Company, Caney, Kan., so that he might re-enter college and finish his course as mining engineer. Mr. Todd's college course was interrupted in 1917 when he went to France with the A. E. F.

Wheeler, Glenn, has resigned from his post as Superintendent of the Oil Division of the Greendale, Ohio, division of the Ohio Fuel Supply Company.

Wood, Edwin D., of the Louisville Gas & Electric Company, Louisville, Ky., has been elected President of the Exchange Club of that city.

DECEASED

Schwartz, Charles A., General Superintendent of the Gas Division of the Arkansas Natural Gas Company, died recently in Shreveport, La.

INCORPORATED

MONTANA *Great Falls*—The Montana Sweet Grass Oil & Gas Company has been incorporated with a capital stock of \$1,000,000. Those named as incorporators are: George T. Hansen, Salt Lake City, Utah; Frank Frantz, E. L. Lyle, B. O. Lyles, Denver, Col., and Donald K. Woods, M. D., Great Falls, Mont.

TEXAS *Eastland*—The Eastland County Gas Company has been chartered. Those named as incorporators being M. E. Adams, E. R. Baker, and H. S. Garrett.

WEST VIRGINIA *Clarksburg*—The West View Oil & Gas Company has been incorporated with a capital stock of \$500,000 for the purpose of exploiting oil and gas lands. The incorporators are: J. A. Fisher, J. E. Parks, and J. E. Stuart, all of Clarksburg; W. R. Smith of Weston and W. L. Warren of Knoxville. The company's chief activities it is said, will be in Doddridge County.

Mix a little heart as well as head with your business

LOUISIANA—*Monroe*—The Love Drilling Company has secured articles of incorporation to operate in the Monroe gas field, with headquarters at Monroe. The new company is capitalized at \$50,000, and will engage in drilling for oil and gas, and will also engage in the purchase and sale of oil and gas lands. The officers are: President, James W. Love of Monroe; vice-president, Glenn N. Mills; secretary and treasurer, L. S. Roberts.

OHIO—*Marietta*—The Harness Oil & Gas Company, capital stock \$25,000, has been formed by R. C. Britton, C. A. Harness and others.

WEST VIRGINIA—*Huntington*—The Rockfield Oil & Gas Company has been incorporated with a capital stock of \$100,000. Those named as incorporators are: H. D. Hatfield, P. J. King, L. T. King, D. W. Smith and H. P. Ballard. The company will operate in Warren County, Ky.

PER CUBIC FOOT—RATES

KANSAS—*Cottonwood Falls*—The Twin Cities Gas Company has reduced its rate from 80 cents to 65 cents per thousand. The new rate is effective also in Strong City.

MISSOURI—*Joplin*—The Joplin Gas Company is asking an increase in its rate to consumers following the increase made by the Kansas Natural Gas Company, the interests supplying the Joplin Company.

NEW YORK—*Buffalo*—A recent ruling of the Public Service Commission in the rate matter of the Iroquois Natural Gas Company and the Niagara Gas Corporation establishes a flat rate of 65 cents per thousand, less a discount of 5 cents per thousand for prompt payment. The former price was 35 cents per thousand net for the first 10,000 cubic feet, for natural gas, and \$1.45 per thousand for artificial gas. The new rate of 65 cents covers the artificial gas service as well, or natural and artificial gas mixed. A merger between the two supplying companies has been ordered. By this combination and with the new rate effective it is expected that the local service will be improved and made adequate for peak requirements.

OHIO—*Cochocton*—The Cochocton Gas Company upon expiration of its franchise is asking a higher rate for the first thousand cubic feet, to be effective under the new agreement.

OKLAHOMA—*Granite*—The interests supplying this city with gas, as well as the Oklahoma State Reformatory, are asking for an increase over the present 13-cent rate. M. E. and H. M. White and R. V. Stephens are owners of the wells supplying the fias.

GENERAL

COLORADO—*Denver*—The annual meeting of the American Association of Petroleum Geologists will be held October 26, 27 and 28 in this city.

KANSAS—*El Dorado*—The Bankers' & Producers No. 1 Polk and Ezell in section 19-17-14, was brought in at 2,170 feet with 15,000,000 cubic feet of gas and 10 barrels of oil. Crawford and Sebastian No. 1 Giller, section 14-16-15, also produced 10 barrels of oil with 2,500,000 cubic feet of gas.

Elk County—A good gasser has been drilled in by Port Fleegeer of Wichita on the Encill lease, section 26-29-6.

Greenwood County—C. A. Conley reports a 2,000,000 cubic foot gasser in No. 1 on the Tate lease, section 26-30-9 at a depth of 1502-28, at which level the well was shot.

Howard—The U. S.-Mex. Oil Company is undertaking to furnish this city with gas from a field ten miles distant. A 10-mile pipe line will be required. The gas to be supplied will be obtained from the Arkansas Natural Gas Company.

Kingman—Gas in good volume was struck in a well drilled on the Senator Field farm eleven miles from the city recently. In another test north of the city on the Rayl property a well was brought in showing good gas production as well as some oil.

Leavenworth—W. E. Williams geologist and owner of leases on 2,800 acres of land in the Linwood field, is said to be forming a stock company, the purpose of which will be to market all gas produced on the Williams holdings. It is said that the Kansas Natural Gas Company has contracted for 5,000,000 cubic feet for distribution in this city and in Atchison.

KENTUCKY—*Barren County*—Ross & Company have completed a good gasser on the Strader lease, near Hiseville.

Warren County—The Belgium Oil & Gas Company has completed a good gas well on the Edwards lease, near Rocky Hill station. The well is being drilled through the gas to a lower level in search of oil.

LOUISIANA—*Fairbanks*—The Oscar Nelson Carbon Company is reported to have added 20 acres of land in section 18-19-5 to its holdings, and will erect an additional carbon plant. The company is also constructing a pipe line which will serve to connect the company's wells with the plants where carbon is made.

Ouachita Parish—The Standard Carbon Company is constructing a gasoline recovery plant at Swartz. The new plant will cost in the neighborhood of \$75,000 to

Advertising is the labor-saving machinery of distribution

and will be operated in connection with the company's carbon plant.

Arreston. The Armistead Syndicate drilled into a 300 cubic feet of gas in its test in section 23-19-11, et Parish.

Arreston. An extension of ten miles to the gas line of Bethany Oil & Gas Company insures an increase 500,000 cubic feet to the gas available for distribution in this city.

Arreston Parish. Webb and associates have completed No. 1 on the Merritt tract and have a well with an estimated capacity of 30,000,000 cubic feet of dry gas from less than two feet in the sand at 2,558 feet. This location is in section 13-21-10.

Arreston Parish. The Woodley Petroleum Company in No. 2-22-10 has completed its No. 1 on the Campbell. This location is fourteen miles west of Haynes. The well was shut in with 10,000,000 cubic feet of gas and some oil.

ASSEMBLY. Kansas. A bond issue of \$2,927,000, secured by first mortgage, has been arranged for by the Gas City Gas Company. The funds will be employed for up maturing obligations and on plant improvement.

OKLAHOMA. **Mid-City.** A gas pipe line from this city to the Glendive-Baker field is being planned by the Western Public Utilities Company. The proposed line will be of 10-inch pipe, and when completed will cost \$1,500,000.

OKLAHOMA. **Medina County.** The Wiser Oil Company completed a 2,000,000-cubic foot gas well on the Geringer farm, and an 80,000-cubic foot gasser on the Law Brothers lease.

Arreston. In Warren Township the Pure Oil Company completed its second test well on the L. Martin through the Keener and Injun sands and it is producing 3,000,000 cubic feet per day.

OKLAHOMA. **Amarillo.** It is reported that a gas-recovery plant is to be constructed in this field by city who are organizing a company. F. J. Storm, formerly with the Amarillo Gas Company, will be general manager of the new concern, and with him he associated L. L. Hastings, who was previously superintendent for the Lower Gasoline Company. Property of the city has been purchased, and machinery and plant equipment has been contracted for, it is said.

Arreston. A gasoline plant, it is reported, is to be erected near this city by the Amerasia Petroleum Corporation. While it is planned to build the plant so its capacity may be increased, the initial installation will handle up to 4,500,000 cubic feet of gas.

Arreston. A six-inch gas line is being constructed by the Switzer Gas Company of this city to the new gas at Okesa, six miles distant.

Arreston. The Skelly Oil Company is installing a gas-line recovery plant near this city, the machinery is being furnished by the Bessemer Gas Engine Company. The plant is to have a capacity of 2,000,000 cubic feet per day.

Creek County. The Prairie Oil & Gas Company has shut in 24,000,000 cubic feet of gas in its No. 5 on the Shoals lease, section 33-16-9, from sand at 2,000-45 feet.

The Phillips Petroleum Company has completed a large gasser in No. 1 on the Hawkins lease, section 4-15-9.

The Prairie Oil & Gas Company in No. 6 on the Shoals lease is reported to have shut in 25,000,000 feet of gas at 2,040-63 feet.

A 4,000,000 cubic foot well has been completed by Frank Billingslea and associates in their No. 1 on the Daniel lease, section 11-14-8. Production was reached at 2,900 feet.

Duncan. The Lone Star Gas Company is constructing two compressor plants near this city, and announces that the plants will soon be ready to put into commission.

Grady County. The Iowa Oil & Refining Company has completed a very large gasser on a wildcat lease in this county. The gas was found at a depth of 1,102 feet, 64 feet in the sand.

Kansas. A franchise to furnish gas in this city is being sought by Okmulgee interests. The gas is available from two wells nine miles out of the city.

Okfuskee County. The Kansas & Gulf Company in its No. 1 on the Barnett property, section 9-11-11, reports a small gasser from sand at 1,402-05 feet.

The Foster Oil Company in No. 1 on the Pigeon lease, Midwest Pool, section 2-10-9, is a 10,000,000 foot gasser at a depth of 3,055-85 feet. The company also reports an estimated production of 30,000,000 cubic feet in No. 2 on the same lease at 3,002 feet.

Indian County. Duffield and associates have completed a 1,000,000 foot gasser in No. 4 on the Johnson tract, section 8-21-13, at a depth of 1,720 feet.

The Biddle Oil Company in No. 15 on the Panther lease, section 8-21-13, has completed a well with an estimated production of 1,500,000 cubic feet per day.

The Oldhorn Oil Company, drilling in section 2-22-2 in the Cherokee Indian Reservation, reports 2,500,000 cubic feet of gas at 1,748 feet.

Idaho. Members of the local board are interesting themselves in a project to bring natural gas service to this city, and the matter has been taken up with the Lone Star Gas Company, a branch of whose main may be reached at a great distance from the city.

PENNSYLVANIA. **Greene County.** Near New Freeport, in Allegheny Township, the Crescent Oil & Gas

Two common failings: Eating too much and talking too much

Co.'s initial test well on the William Clark farm is completed in the Gordon sand at a depth of 3,144 feet and is producing 1,000,000 feet of gas per day.

Pittsburgh—In the 28th Ward Thomas McDermott drilled in his test on the Walters' heirs' lot, and reports a gasser good for 1,000,000 cubic feet.

Pittsburgh—In a study of the products of combustion from gas stoves being made by the experiment station of the Bureau of Mines by G. W. Jones, explosives chemist, and L. B. Barger, laboratory assistant, the testing of seven different types of gas stoves has been completed. A resume of the work shows that 1.7 per cent. carbon monoxide is the maximum amount produced in a 1,000 cubic foot chamber at the time the flame extinguishes from lack of oxygen. This is a fairly large yield of carbon monoxide based on the amount of natural gas used, 20 cubic feet of gas giving 6 cubic feet of carbon monoxide. It was definitely determined that an abundant supply of air to the flame, either yellow or blue, gives no carbon monoxide and that aldehyde vapors are always accompanied by carbon monoxide. A report covering the results of this investigation is being written for publication.

Tidoute—Chase & Clinger have completed a good gasser on the Wheelock farm.

TEXAS—*Brazos*—The Lone Star Gas Company, it is reported, is erecting a gasoline absorption plant near this city.

Corpus Christi—A natural gas line is in process of construction from White Point fields across the bay to this city.

The W. B. Pearson Construction Company of Houston is asking for a natural gas franchise to operate in this city.

Erath County—Paschal & Triplett of Cisco, have drilled in a large gasser in No. 2 on the Laney lease, two miles west of Duffau.

Kingsville—No. 1 well on the Hart property drilled by the Frances Oil Company has blown itself in and is reported to be making about 50,000,000 cubic feet of gas.

Montague County—The Petroleum Producing Company in No. 1 on the Maddox lease is shut down with an estimated showing of 30,000,000 cubic feet of gas at a depth of 789 feet.

Potter County—No. 1 well on the Masterson lease drilled by Montgomery and associates developed a large volume of gas at 2,605 feet. This was mudded off and the well is being drilled deeper.

Richland—The Lone Star Gas Company is piping this city for natural gas service, and expects to have the entire distribution system ready for service within the next few weeks.

Stephens County—The Roxana Petroleum Company in No. 2 on the Norton tract has a large gasser at 3,245 feet.

Webb County—The Border Gas Company of Laredo is taking gas from the No. 2 well of the Caroline—Texas Company which is said to have a production of 65,000,000 cubic feet per day.

Wortham—The Lone Star Gas Company has completed the work of installing a distributing system in this city, and gas will shortly be at the disposal of Wortham residents.

Young County—The Penn Cities-McGarr interests have indications for a large gasser in their No. 2 on the Herron property.

No. 1 on the Scott lease, South Bend townsite, drilled by the Eureka Producing Company and the Hobbe-Hasckell interests, came in at 3,485 feet with a large production of gas, as well as considerable oil.

WEST VIRGINIA—*Boone County*—A production of 160,000 cubic feet of gas is reported from well No. 2 on the Boone-Kanawha land and mining company tract in Peytona district.

Calhoun County—In Sherman district, Godfrey L. Cabot has a gasser in the Big Injun sand at a test on the L. S. Penniger farm.

Calhoun County—On Anna Moriah Creek, Sheridan district, B. J. Crowley has completed his No. 1 on the William and George Cooper farm and have a light gasser and a showing for about a two-barrel oil well in the salt and Berea sands.

In Sherman district, the South Penn Oil Company's test on the W. T. Weaver farm is dry in the Injun sand.

Doddridge County—In Greenbrier district, the Continental Oil & Gas Company's test on the F. L. Day farm is through all sands and showing for a light gasser.

Gulmer County—The Carnegie Gas Company has completed the Hewlett heirs' No. 1 well and reports a production of 700,000 cubic feet of gas. It is an old well drilled deeper, in Center district.

In Troy District the Hope Construction & Refining Company test on the H. I. Allman farm is a gasser in the Big Injun sand.

In the same district the company also has drilled a test on the Allman farm, which is reported a gasser in the Big Injun sand.

A gasser is also reported by the Hope Company in Salt sand on the Ella Steinbeck farm, and one on the H. L. Farnsworth farm. Its test on the Hefner farm is dry and abandoned.

In Glenville District the Pittsburg & West Virginia Gas Company has a gasser in the Big Injun sand on the Grandville Collins farm.

In Troy District, E. C. McCall & Company's test on the W. B. Maxwell farm is a gasser in the Big Injun sand.

The Pittsburgh-West Virginia Gas Co.'s No. 1, on the L. T. Matheny farm, Troy District, is completed in the Gantz sand and is a gasser.

Fortune has wings. It wouldn't get anywhere if it remained on the ground

Hope Natural Gas Co. No. 1 on the W. A. Smyth, located on Buck Horn of Horn Creek, is also in the Big Injun sand as a gasser.

Monongalia County. The Cole Fork Oil & Gas Company drilled in their No. 2 well on the Dye lease. It is said to be good for half a million feet.

The company's No. 1 well in this section is said to bring up to 6,000,000 cubic feet per day. The company will drill more wells on this same lease.

Orkney district. The Orland Oil & Gas Company big Injun gasser at the No. 2 on the J. C. Benjamin.

Russmell and others have completed a large in Center district, in the well on the Warren S. lease.

Sardinia County. In Sardinia district, the Vesper Oil Company's test on the W. L. Gifford farm is a gasser in the Gordon sand.

Sardinia County. In Sardinia District the Delva Tex Company has a gasser in the 50-foot sand at its test Charles Smith farm.

Shelby County. A production of 368,640 cubic feet is reported by the Eastern Carbon Company from No. 2 well on the company's tract of land in Calm District.

Shelby River, Big Sandy District, the Truivitate Company's gasser on the Sarah Young farm has been drilled and it shows a capacity of 750,000 cubic feet.

Shelby County. J. B. Weir has completed No. 95 in Sandy district, on the tract of the Falling Rock Coke Company at a depth of 2,000 feet, and a production around 1,500,000 cubic feet.

Shelby County. The Huntington Development & Gas Co. it is reported, has a production of 800,000 feet in No. 1 on the Alexander Atkins lease, district.

Shelby-Paw district, the Randall Gas Company completed a gasser in the Gordon sand on the W. C. Burns farm.

Shelby County. The Huntington Development & Gas Co. has completed No. 276 on the James Proder property, and reports good production. The lease is in Carroll District.

Shelby County. In Liberty District the Manufacturing & Heat Company's test on the J. S. Hager is a gasser in the 50-foot sand. In the same district the same company's second test on the Maley Yeater is a gasser in the Gordon sand.

Shelby County. In Union District, the Pittsburgh & West Virginia Gas Company has a salt sand gasser at the Hall Summerville farm. In Grant District, the Central Oil Company's No. 4 on the Omer farm is a gasser in the Maxon.

Marshall County. In Cameron District, C. H. Patterson & Company have a Gordon sand gasser on the Mc Claim Phillips farm.

Monongalia County. In Clay district, J. H. McDermott Oil Company has a fifth sand gasser at the No. 1 on the S. L. Chaplin farm.

Monongalia County. In Battelle District, the Pittsburgh & West Virginia Gas Company has a gasser on the Jasper Shriver farm.

In Clay District, the Clay District Oil & Gas Company has a fifth sand gasser on the Lucy Stull farm.

Montgomery. The Montgomery Gas Company has applied to the Public Service Commission for permission to discontinue service to industrial consumers, owing to depletion of its supply.

Morgantown. It is reported that W. E. Lanham, on whose property in this city a good gasser was drilled in a short time ago at a depth of 102 feet, will make an attempt to commercialize the supply which he does not utilize in his own home. Mr. Lanham, it is said, is contemplating arranging for a supply of meters to be installed in the homes of twelve to fourteen neighbors who wish to become gas users.

Pleasant County. In Lafayette district, the Walnut Run Oil Company's No. 2 on the W. C. Dutton farm has been completed in the Big Injun sand at a depth of 1,850 feet and is dry in all sands.

In McKim district, the Williams Drilling Company had similar luck at their No. 14 on the J. A. Scauwecker farm, completed in the Cow Run sand.

Putnam County. On the Kanawha River, Prestonia district, the Owens Bottle & Machine Company has a fair gasser on the Eger property.

In Pocahontas district, the Blackshire Oil & Gas Company have completed their test on the Marmet Coal & Land Company tract in the Big Injun and have a 4,000,000 foot gasser at a total depth of 1,600 feet.

Ritchie County. The Carnegie Natural Gas Company in its No. 2 on the Elliot farm is reported to have drilled in a good gasser in the Big Injun sand.

Roane County. The United Fuel Gas Company reports a production of 200,000 cubic feet from well No. 1272 on the Ellis C. Over tract in Greenbrier District.

Roane County. The United Fuel Gas Company reports a production of about 400,000 cubic feet of gas from well No. 1270 on the Samuel K. Wright farm in Greenbrier District. The well was to test 1,600 feet and gas was struck in the Keener and Big Injun.

Roane County. In Greenbrier District, the United Fuel Gas Company has a Big Injun sand gasser at a test on the Samuel K. Wright farm.

Mental ease is a full brother to physical laziness

Tyler County—In Elsworth district, the Shriver Oil & Gas Company have completed their test on the Lloyd Farrell farm to the Keener and Injun sands and it is dry.

In McElroy district, the Carter Oil Company's second test on the Stoneking heirs' farm is a gasser in the Big Injun sand.

In McElroy district, the Manufacturers Light & Heat Company has a Gordon sand gasser at No. 4 on the Grant Warner farm.

Union—The Carter Oil Company has completed its No. 1 well on the Isaac Smith farm on Nutters Fork and has a light producer of oil and about 500,000 feet of gas in the Injun sand.

Wayne County—On the waters of Roh Creek, Grant district, the Westover Oil & Gas Company's No. 6 on the Furgeson heirs' farm has been completed in the Big Injun sand and showing for 500,000 feet of gas from that formation.

Wetzel County—A new gas pool is looked for as the development work in Center district progresses. This location is on Rocky Run, three miles west of Littleton.

On Fishing Creek, the Hope Natural Gas Company completed in the Big Injun sand, a second test on the J. A. Riter farm. It is good for 4,500,000 cubic feet a day. No. 1 on the same farm was completed some time ago and came in at 5,000,000 cubic feet. In the same district, the Manufacturers Light & Heat Company has a small gasser on the Antil farm.

WYOMING—*Carbon County*—The Rocky Mountain Gas Company has placed in commission its new gas line of twenty-miles of six-inch pipe from this city to the Mahoney Dome. The construction work was done by the Illinois Pipe Line Company.

ALBERTA—*Millet*—The Mutual Oil & Gas Company reports a large gasser in its well at Pigeon Lake, 18 miles west of here and 37 miles from Edmonton.

Peace River Town—The Sunburst-Boyce interests have drilled in No. 1, in section 23-36-2w, and report a large gasser with 1,200 pounds pressure.

Viking—The Viking Gas Company, a subsidiary of the Northern Alberta Natural Gas Development Company, has obtained authority to pipe gas to this village. The line is now under construction, and it is expected that it will be completed before the end of the year. The rate to be charged for the gas will be 50 cents per thousand.

ONTARIO—*Chatham*—The Natural Gas Commissioner has ruled that the policy to conserve the natural gas supply for domestic purposes only will not be set aside to meet conditions of fuel shortage due to the coal strike. Many applications to burn natural gas have been received from industrial concerns.

PRESENTATION TO MR. RUUD

A feature of the banquet tendered Mr. Edwin Ruud of the Ruud Manufacturing Company, at the William Penn Hotel, Pittsburgh, on the occasion of the company's Twenty-fifth Anniversary, was the presentation to Mr. Ruud of a very beautiful statuette, "The Unveiling of Nature." Mr. Ruud received the gift, expressing in his acknowledgment the appreciation he felt at the honor done him.

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NOVEMBER

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CONDITIONS DECIDEDLY IMPROVED

THE following points bearing upon conditions in our country have been gleaned from various sources, and are summed up to indicate the activities of recent weeks showing clearly real improvement in the fundamental conditions of the country:

Business Failures during September numbered 1,518 compared with 1,695 the month before and 1,503 in September a year ago. This is the smallest number of failures reported in any month for a year, the largest number of failures for any month occurring in January, when 2,714 firms were suspended. Liabilities for the September failures were only 34 million dollars compared with 39 million dollars the previous month and 42 million dollars for the smaller number of failures in September of last year.

Shares traded on the New York Stock Exchange during September numbered 23,505 thousand compared with 17,863 thousand in August and 13,261 thousand in September of last year. Bond sales were only 292 million dollars compared with 313 million dollars the month before and 327 million dollars a year ago. Trading in Libertys amounted to only 89 million dollars, the lowest total for several months, which compared with 90 million dollars in August and 207 million dollars in September of last year.

New and Large Corporations formed in September numbered 664 companies with authorized capital of 650 million dollars compared with 813 companies formed in August with capital of 647 million dollars and 699 concerns in September a year ago with a capital of 490 million dollars.

Money in Circulation on the first of October totaled 4,516 million dollars compared with 4,394 million dollars a month before, making the per capita circulation \$41.00 compared with \$39.93 the month before and \$42.99 a year ago. The stock of money in the United States is now 8,388 million dollars of which 3,624 million dollars is held in the Treasury. These figures are according to the new form of circulation statement and give a more nearly correct showing of money actually in the hands of the people, thus bringing money in circulation into its proper relation with commodity prices, workers' wages and salaries and incomes of all the people.

The average price of all Commodities, according to the Bankers' Commodity Price Index, on the first of October was \$441.58 compared with \$439.24 a month ago, \$406.73 a year ago and \$358.77 on the first of August, 1914.

Building Operations in the principal cities September totaled 193 million dollars compared with 220 million dollars the month before and 148 million dollars a year ago. For the first nine months of this year, total expenditures represented in permits were 1,851 million dollars, a new high record, which compared with 1,156 million dollars for the first nine months of last year.

Anthracite Coal production for the four weeks ending September 30 was 4,967 thousand tons compared with 161 thousand tons the previous month (strike period) and 5,759 thousand tons for the corresponding weeks of 1921.

(Concluded on Page 348)

GAS INDUSTRY

NATURAL GAS EDITION

TRANSPORTATION — GASOLINE PRODUCTION — DISTRIBUTION

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CONTENTS FOR NOVEMBER, 1922

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Bituminous Coal production for four weeks ending September 30 was 38 million tons compared with 33 million tons for the same period of last year and production for the calendar year to September 30 was 271 million tons compared to 295 million tons for the first nine months of 1921. Beehive and by-product Coke production during September totaled 2,850 thousand tons compared with 2,333 thousand tons the month before and 1,712 thousand tons in September, 1921.

Petroleum production during August was 46 million barrels compared with 47 million barrels the previous month and 41 million barrels a year ago. Stocks of crude oil on the first of September were 265 million barrels, a new high record, compared with 261 million barrels a month before and 179 million barrels a year ago. Consumption of domestic and imported petroleum during August is estimated at 51 million barrels compared with the same consumption the previous month and less than 43 million barrels in August of last year.

New Oil Wells completed during September numbered 2,203 compared with 2,377 for August and 1,275 for September of last year. Of the August wells, 1,709 were producers compared with 952 producers brought in during August, 1921.

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Precision Instrument Co., Newark, N. J.
Prichard Supply Co., Mannington, W. Va.

Rathbone, Sard & Co., Aurora, Ill.
Rathbun-Jones Eng. Co., Toledo.
Reid, Jos., Gas Engine Co., Oil City, Pa.
Rensselaer Valve Co., Pittsburgh, Pa.
Reliable Stove Co., Cleveland.
Republic Iron & Steel Co., Youngstown, O.
Republic Rubber Co., Youngstown, Ohio.
Republic Supply Co., Houston, Tex.
Reznor Mfg. Co., Mercer, Pa.
Riesenman Mfg. Co., Ltd., Franklin, Pa.
Robbins Publ. Co., New York.
Robinson Packer Co., Tulsa, Okla.
Roebing, John A. Sons Co., Trenton, N. J.
Geo. D. Roper Corp., Rockford, Ill.
Rossendale-Reddaway Belt'g & Hose Co., Newark, N. J.
Ruud Mfg. Co., Pittsburgh.

Safety Gas Stove Lock Co., Nashville, Tenn.
Sands Mfg. Co., Cleveland.
Scott Gas Appl. Co., Washington, D. C.
Spang, Chalfant & Co., Pittsburgh.
Sprague Meter Co., Bridgeport, Conn.
Stacey Mfg. Co., Cincinnati.
Stitt Ignition Co., Columbus.
Stokes Deep Well Co., Shreveport La.
Strause Gas Iron Co., Philadelphia.
Superior Tube Co., Kansas City, Mo.

Taylor, W. P. Co., Buffalo.
Toledo Pipe Thr'd'g Mach. Co., Toledo, O.

Union Rubber & Asbestos Co., Trenton, N. J.
United Seal Co., Columbus.
Upson-Walton Co., Cleveland, O.
U. S. Rubber Co., New York.

Walker & Pratt Mfg. Co., Boston, Mass.
Welsbach Co., Gloucester City, N. J.
Westcott Valve Co., Seneca Falls, N. Y.
Westinghouse Elec. & Mfg. Co., Pittsburgh.
Wheeling Steel Products Co., Wheeling, W. Va.
Williams Tool Co., Erie.
Witman & Co., Columbus.
Williamsport Wire Rope Co., Williamsport, Pa.
Worthington Pump & Mach. Corp., Buffalo.

Yorke Derrick Co., Washington, Pa.
Youngstown Sheet & Tube Co., Youngstown, O.
Young, Wm. T. Drilling Eng. Co., Oil City.

ANNUAL CONVENTION NATURAL GAS ASSOCIATION OF AMERICA
and EXHIBITION OF SUPPLY MEN'S ASSOCIATION
Louisville, Ky., - 1923

FROM THE EDITORIAL MAIL BAG

BOLD STOCK PROMOTION FAKE

ADVICES come to us from the Geological Survey to the effect that a case of bare-faced misrepresentation has been enacted by a company engaged in selling oil stocks and is brought to the attention of the public by the Director of the U. S. Geological Survey. In the advertising matter of this company, in order to impress the reader with the belief that the Government has endorsed the particular enterprise as a "sure thing," a map of the region published by the Federal Geological Survey is said to be reproduced. On the map as printed in the rather elaborate prospectus a route of supposed oil drainage extends from the St. Lawrence River, in Canada, southwestward across the Adirondacks and the intervening states to a point on the Mississippi river. Another route of presumed oil drainage is shown as extending from the Lake Superior iron region across Wisconsin, Illinois, and southward along the Mississippi. A third route of drainage is mapped as extending from the Canadian boundary, in western Montana, through the Yellowstone Park, and heading in a bee-line, for eastern Louisiana. As is usual in stock promotion literature where such bogus maps are used to beguile the small investor, the three purported drainage routes unite exactly in the area where the company properties are located, which area in this particular instance lies on the east side of the Mississippi river in Louisiana. The title of this map reads, "United States Geological Survey map showing center of the oil drainage of United States." On another page of their pamphlet under the heading "What Uncle Sam says about it," the promoters say, "Look at the map which shows the result of the United States Geological Survey. The map was made from Plate I, Bulletin 429. This Survey shows the oil drainage of the United States. As you can readily see, our holdings are right in the center of it. * * * The Government geologists are unprejudiced and their conclusions are always regarded as authentic and final."

So far as the last sentence is true, Director Smith of the U. S. Geological Survey states without prejudice that his "final conclusion" is that the authors and makers of this prospectus are plain crooks. There is no resemblance or connection between the Government map specifically referred to and the oil map of the promoters. Nor did the Geological Survey or any other authority ever publish such a "drainage" map. It is not only fraudulent and untruthful in every respect, but absurd to the extreme. Judged by their advertising matter alone, the promoters are either crude crooks on their own account or the simple-minded dupes of their "experts." In either case, they are not trustworthy advisers of the small investors to whom they make their appeal.

TOUCHING ON PATENTS

SO far as we know, the article on the "Ancient Art of Cracking," by Frank A. Howard, appearing in part (by courtesy of "The Lamp") in this same issue, is the first printed authoritative recounting of the development of that which has become known very widely as the "cracking process" employed in the recovery of gasoline.

Whether there should be royalties paid for the privilege of employing the practice, or whether its use should be open to all and all alike, we are not discussing. That is left for the directly interested parties to consider. Our point is to present the line of development as written by Mr. Howard.

WHO'LL WRITE HIM

Mr. Robert Standen of France writes the following, and we are sure some of our readers will have sufficient interest to write him conveying such information as may be possible and accomplishing at the same time data from Mr. Standen that will, no doubt, prove of interest.—Editor's Note.

"I was present recently on Saturday last at the discovery of a big flow of natural gas in the south of France.

"The gas, a pure methane, appeared to come from a sand bed, about 30 feet from the surface, and caught fire at once, on the application of a light. The presence of large quantities of natural gas in this neighborhood should be of considerable economic importance, and I should be grateful to any of your readers for 'pointers' on the subject, as we are not familiar with this phenomenon in Western Europe.

ROBERT STANDEN,
15, Pall Mall East,
London, S. W. 1."

NATURAL GAS GAINS PROMINENCE

THE National Exposition of Power and Mechanical Engineering that is booked for Grand Central Palace, New York City, embodies educational features strengthened by an exhaustive program of motion pictures which have been secured in co-operation with the U. S. Bureau of Mines and various manufacturers.

In the list of reels to be shown is "The Story of Natural Gas." All such publicity is worth while, and this industry is fortunate in being included among other industries in a showing of this nature.

Many a man who punches a time clock lives to wear a full jewelled chronometer

DEATH OF LOUIS C. SANDS

LOUIS C. SANDS, aged 64, Vice-President and General Manager of the Oil Well Supply Company, died Sunday in his home, 302 South Negley Avenue, Pittsburgh, Pa. He had been connected with this concern for 36 years. He was born in Hempstead, Long Island, New York, in 1859.

After completing his education he enlisted in the Navy, and on completion of that enlistment in 1885 entered the oil business, beginning his service with the Oil Well Supply Company at Richburg, New York. In 1887 he was transferred to Lima, Ohio, where he remained until

He was known, not only throughout the Oil Country of the United States, but was one of the most prominent men in the industry in the world. In 1899 he supervised the drilling of a well at the Paris Exposition, and in this connection was brought in contact with the leading men of the Petroleum Industry from all quarters of the globe. He was an acknowledged expert in his line and had a thorough grasp of the export business in all its details.

Mr. Sands had been a director in the Diamond National Bank for the last ten years, and at the time of his death was a member of the Board of the Presbyterian Hospital, the National Union Fire Insurance Company and the American Petroleum Institute. He was a mem-



LOUIS C. SANDS, Late Vice-President and General Manager, Oil Well Supply Co.

at which time he entered the Nitro-Glycerin business which he remained some two years. In 1897 he entered the employ of the Oil Well Supply Company at Pittsburgh and had charge of the Nobles-Oakdale and McDonald Districts in the height of development. In 1903 he was elected Secretary of Oil Well Supply Company, in which capacity he remained until 1908, at which time he was elected Vice-President and General Manager, which office he held until his death. During the War he served on the Government Petroleum Committee.

He was a member of the Christ Methodist Episcopal Church, Center Avenue, and was active in the work of the church. He is survived by his widow, Mrs. Minnie G. Sands; one daughter, Mrs. Paul A. Rehr of Cleveland, Ohio; one grandson; his mother and one brother, George Sands of California.

In addition to what has been stated in a formal way regarding Mr. Sands in the foregoing paragraphs, we wish to add a word of a somewhat more personal nature. Mr. Sands became known to us personally several years since; our interview was in his office when we were at-

fighter has to take a lot of punishment before he reaches the championship class.—Morse Dry Dock Dial.

ting forth the advantages of this magazine as a medium for the use of his company. In many such instances the one presenting the subject receives only recognition, not a sympathetic hearing, whereas Mr. Sands from the very first moment of the interview listened attentively and thoughtfully, and at the conclusion of the representative's presentation of the matter spoke in hearty and approving words of the project, the effort of the pub-

lisher, of the good work of the editor, and put his seal of approval upon the matter in the form of an order which has stood for these years. Mr. Sands was a discerning man, one who came quickly to a decision, but above all was just, weighing all sides quickly before determining upon his course.

The industry at large, and Mr. Sands' many friends have lost a most companionable and approachable man.

Ohio Oil and Gas Meeting

*Harry J. Hoover Elected President at Fourth Annual Meeting; T. C. Jones
and E. T. Claggett are Vice Presidents*

THE Fourth Annual Convention of the Ohio Gas & Oil Men's Association was an affair notable in every respect, profitable from the standpoint of the addresses presented, and from the social touch which develops at an informal convention such as meeting of natural-gas-men, or, of oil and gas-men.

"The Story of Natural Gas," a movie affair, was presented, the film being available to companies for use as a means of "selling the gas bill."

Governor Davis could not be personally present, therefore in his behalf Hon. William H. Pitts, Director of Commerce of the State of Ohio, welcomed the hosts present. This address was responded to by Herbert M. Myers in well-chosen terms. Mr. Myers caused much laughter by recounting in his address the story of an old colored man who attended camp-meeting. The story runs as follows:

They tell me a story of a colored man who arrived one day at a camp-meeting, and the chairman of the reception committee was down at the station to meet the incoming guests, and this colored fellow gets off the train and starts down the platform, and the chairman of the reception committee goes up to him and he says, "Glad to welcome you here, deacon." He looked at him, and he says, "I'se no deacon." "Well, he says, "Glad to welcome you here, reverend." And he says, "I'se no reverend." "Well," he says, "Glad to welcome you here, brother." He says, "I'se no brother."

Well, the chairman of the reception committee looked at him in astonishment. He says, "You tells me you're no deacon; you tells me you're no reverend; and you tells me you're no brother. What are you coming down to this camp-meeting for?" "Well," he says, "I just came down to sing bass and see the ladies."

In this same address of response, Mr. Myers "touched up" Pittsburgh a bit, much to the amusement of those who came from other sections. The following was the blade of grass with which he did the tickling:



HARRY J. HOOVER

And the admiral got up and he said: "Ladies and Gentlemen of this Chamber of Commerce: I have listened with a great deal of interest to the remarks about Pittsburgh; I have seen your factories; I have seen your parks and your boulevards and your streets; I have been in your business section; I have observed your railroad facilities," and, he says, "I have observed

The Alibi collector has frequent opportunities to become acquainted with a new boss.—The Lamp.

...and the fact that the gas is not being used for anything but the production of electricity. The gas is being used for the production of electricity, and the electricity is being used for the production of gas. This is a cycle, and it is a cycle that is not being broken.

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RESIDENT MAMAHON'S ADDRESS

Ohio Gas and Oil Men's Convention

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investment of capital into these enterprises had passed. The community was actually the master.

The independence of the capital invested in our business in this state was destroyed like age destroys the independence of an old and faithful employee. It then became necessary for our companies not only to maintain a high degree of efficiency in service, but to be upon exceedingly friendly terms with the public, which requires rather constant reminders of the fidelity and extent of service. Dismissal meant ruin. There then developed, out of the knowledge of this situation, the agitation which found its expression in the establishment of a Central Public Utilities Commission. Many of us who belonged to the Old School viewed this development with alarm and personally opposed it. We felt, then, that the sense of fair play on the part of our neighbors and friends in the communities that we served was a sufficient guaranty—that any difference that might arise could be ironed out locally when the situation was approached in that spirit of fair play.

The "home rule" tradition was firmly entrenched in the minds of the people. Our local courts familiar with local situations afforded, as we believed, all of the necessary machinery in which local differences could be equitably determined. We felt that a centralization, such as this innovation, while ostensibly aiming to give us protection, and at the same time protecting the public, was likely to destroy the sense of responsibility on the part of local authorities and to compel us to air our differences in a place where neither the public nor ourselves could have the advantage that comes from peculiar local knowledge of local conditions, that there could be no such thing as a successful divided responsibility. After many years of observation of the functioning of this machinery, we have no cause to regret our attitude in that respect. Some of us still believe that a machinery as well adapted for the needs of all, would have developed under a "home rule" plan; that many local quarrels, had the ultimate decision been upon local authorities, would have ironed themselves out with fairness. However, the Commission has become an established institution. It was inspired by the good or bad example of other states. It never existed until development was complete and our investment chained to the territory. In the main, it has been manned by men of high calibre honestly and earnestly endeavoring to serve the purpose of insuring fair and indiscriminate service to the public with a fair return to the utility. Many of the worst features that were then apprehended have not been realized. There has been of late in charter legislation some return to the doctrine of "home rule."

One salient thing, however, has always stood in the situation that has developed and I believe it unwise and unfair, and that is, the risk that was taken in the original investment in our companies has been entirely disregarded as a factor in determining returns. The Commission has reduced the return to an investment basis so that practically every one of our companies today is and has for years been getting a return on the investment that

compares unfavorably with the return possible even in the general and absolutely safe loan business. Had the money that has been put into gas enterprises been put out at 5 per cent interest on mortgage loans, practically every company in Ohio would today be in far better financial situation at its approaching dissolution than at present and would have had no risk and no concern with worry.

We note these things, not out of any spirit of self interest, because the years that remain for our business are few. From these the public may learn the great lesson that the spirit of development must have its incentive. It is a safe venture that hardly a public utility of any size has newly developed in Ohio since the state assumed the supervision and control. It may be that none are needed and the explanation may be quite aside from relation to this institution. It more probably is, however, that capital will not pioneer without its freedom and finds this freedom in other unregulated fields.

We hear a great deal in these days of government ownership of utilities. Years ago that used to be the slogan of so-called radicals. Today the owners of any utility from the railroads down, would gladly take the money that would be realized to it by purchase by state or federal government ownership and seek in other fields than public service, investment return with freedom. The agitation for government ownership of public utilities has ceased to be the cry of the so-called radicals and has become the cry and slogan of the conservative owners of the utilities. This has become so, in a large measure, from the destruction of incentive and the limitation of return to a purely investment basis. It has also become so because the need of uniformity of legislation has resulted in the imposition upon public utilities in general of every rule, regulation, law or change which local situations have made necessary as a remedy for that local condition. When a dispute arose with reference to the advisability or power of a company to withdraw its service in the event that it so desired, although it was purely a local matter, legislation immediately was introduced and passed forbidding utilities to withdraw their service. This only as an instance.

The taxation feature has developed to an amazing extent, both in federal and state matters. The voluminous reports that have been required have thrown a burden upon the public utilities and in many instances penalties, so that the conduct of a utility in itself has become the most burdensome, hazardous kind of a business. The utilities have been made practically the tax gathering agencies for both the state and the nation.

It is impossible for me, in the brief time that the proprieties allow, to further discuss these matters. I trust, however, that out of this convention there may come a knowledge which will be a benefit to ourselves for the few remaining years in which our business may be in existence. I hope more that it will benefit those public service institutions which are in a broad way associated with us, if not in the particular product, then in the

Don't be afraid of what "people will think"—people don't think about you half as often as you think they do.—Through the Meshes.

a purpose of serving the public. I trust there is found and developed out of the wisdom and experience that is available among the members of this association, some concrete suggestion that will be of benefit to the state and to us in solving the problems we confronted us and that will be of benefit to the people of our state, our friends, and neighbors we have so long endeavored to serve and who, after closer to us despite whatever little differences of opinion we may have had than any others.

Continued from page 354

JOHN M. GARARD REMINISCES

JOHN M. GARARD, one of the deans of the natural gas field, we say "one", because in this field there are several deans, was called upon at the recent meeting of the Ohio Gas Men, not as an "old man" taken from the shelf of time being, but, however, as one of the "Old Folks" to tell the "old folks" of things they had forgotten and to tell the young folks stories about their roots.

Garard's remarks were indeed democratic, and wondering if the recent "democratic" land was at all the result of the impression made by Garard's "democratic" remarks of Mr. Garard at the meeting which occurred just prior to elec-

tion. A republican can be as "democratic" as a democrat, or not he agrees with the principles of the republican party. "Democracy" as represented in the remarks of Mr. Garard's friendly and pleasing remarks is of the right sort, and could never be objected to even among "Republicans". We all like that element that is found in a circle of those naturally inclined, such as are the members of the natural gas family, so many of whom came from "low" positions, but have found themselves among the leaders in these more recent days.

Garard said:

As somewhat taken back when I was called upon one of the old timers, to speak of events that take place in the early years of the oil and gas industry, I really thought it very presumptuous on the part of your worthy President to mention my name in connection, and I know you will look at the matter in a different light when I tell you I was water boy for the gang of which he was foreman, and they had a reputation of being the poorest gang in that town, and then have him get up and say we would be far from some of the old men. If he had made statement, "You are now hearing from one of the old deans, it would have been much more appropriate."

King of the ancient vintage, my mind goes back to the time I see in the audience. There is F. W. Crawford,

who used to dress tools when I was a boy in knee pants and played about the derrick, and when he came to work, nearly always two or three hours late, his excuse was that a young lady from out of town was visiting at Eminton and he had been out later than he expected. This caused his brother George to work over time and he has been at it ever since.

Then there is old man Hagan of Corning, Ohio. My first recollection of him was riding around over the oil country with him in a bunk wagon and holding the horses while he was pretending to visit the wells. We frequently stopped where there were no derricks in sight, but his excuse for stopping at these places was that he wanted to leave some word for one of his teamsters. This to my youthful and innocent mind was a satisfactory explanation, but I now look back and fully realize how Oliver pulled the wool over my unsophisticated eyes.

Another of the old patriarchs is my dear, dear old friend Martin Daly, who used to have charge of the Northwestern Ohio Natural Gas Company at Toledo. My first acquaintance with him was away back about 1888 or thereabouts. I remember I was wearing my first long pants, in fact my first tailor made suit, made by the leading tailor of Eminton, Pa., and it must have been all right, as Fred Crawford, Lem Neely and many of the other old timers still patronize him.

Still another of the ancient vintage is Presley W. Lupton, President of The Logan Gas & Fuel Company, who was the right hand man of the dean of all, the late T. N. Barnsdall, whom we all knew and loved, and it was always said and never disputed that his word was as good as his bond, and no human was ever allowed to suffer from hunger if T. N. knew it.

I shall not dwell on the early years of my association with Presley, for they were at times stormy on account of supply and demand for gas, but conditions changed many years ago and I now count him as one of my good friends.

I see one of the oldest, or at least he seems so to me, men in the gas business, John Corrin. I will never forget him for he won't let me. When he was married I happened to be in town that morning and when he drew up to the church box like I took hold of his horse and held him until the priest got his tale came out. As a matter of course he wanted to show off in front of his bride and he went through all of his pockets trying to find a dime, as that was the customary tip at that time, but he could find nothing less than a silver dollar, which he reluctantly handed me and I never meet him that he does not ask me for the change, and that is one of the reasons I try to avoid him.

I might continue along this line for an indefinite period, but I am going to tell you of some of the hardships the early oil and gas men had to meet. In the early days extra fittings, extra heavy fittings were an unheard of quantity. We never heard of anything of that kind. When I am talking of the "early days" I

are they who were not satisfied to let well enough alone. All the world is today, we owe to them.—Shur-on Chronicle.

am speaking of my early experience in the oil and gas business, which dates back to 1882.

It was my lot to do things that under no circumstances would I think of doing, or permitting any of our employes to do at the present time. We had gas wells at that time—only two—with a rock pressure of about twelve hundred pounds, and all we had on them was a cast iron stop cock, and we would blow them off occasionally, go up and loosen up the nut, hit the core a crack, and pound it back and open it up and blow it off, and thought everything was lovely. None of us would do that at the present time, because it is absolutely dangerous.

The same condition prevailed in all kinds of fittings; everything we had was of the crudest kind.

The first oil well I remember of seeing was on the Robert Maple farm in Greene County, Pennsylvania. That county has produced some wonderful people—I am from Greene county.

It was located on Dunkard Creek, and that is where the Dunkard sand got its name. The oil was gotten at about seven hundred feet, and some wells in that section produced as high as seventy-five barrels. Mr. Maple owned the farm, but he only leased a small portion of it. He was smarter than some of us at the present time, I guess, and he got a fabulous sum, or it was so considered at that time, for the remainder of his farm; namely, about seventy thousand dollars in gold, which he put in empty jars and set in the window, so his neighbors could see it and see how wealthy he was. That shows honest neighbors. They wouldn't do that today. You would not dare to set five nickels.

My first experience in the oil business was at Parker's Landing. I was on the farm, and after we were through harvesting I concluded I would go up to Parker's Landing, as they had just opened up that field, and I went up and went over to the hotel—across the river—and sitting on the porch that night, there was a husky-looking man sitting there and we got to talking, and I told him I was up there looking for a job. "Well," he says, "you come up in the morning and I will give you one."

He was very explicit in explaining, so in the morning I went up and found him, and he says, "Where is your clothes?" "Why," I said, "I have got them on." "Well, but," he says, "you don't want to wear those clothes doing the work those men are doing." They were roustabouts on the well, and the greasiest mortals I think I ever saw. I said, "Is that what you want me to do?" He says, "Yes." "Well," I said, "you can go to hell with the oil business."

And I got on the train and the next place I lit was in Iowa, and I was in Iowa for two years, and in Iowa I had an experience that I hope none of you will have, for I started out to sell celluloid thimbles. (Laughter.) Celluloid thimbles and rubber bibs for children.

Now, you don't need to laugh about it. I got a lot of money. I never went to a house where there was a young lady, that I didn't sell a thimble that cost me

two cents, and I sold them for a quarter, so I had a fair profit.

Well, I was doing fine, and I was stricken with the dumb ague, the most cursed disease I think that anybody ever did have, and I went to the hospital, and when I came to myself and was able to go out I think I had my pants and shirt; all the rest was gone.

But I will go back to the oil business. The first deep well that was ever drilled in Greene County, Pennsylvania, was drilled at Montmorris. It was called the "Calamity Well." There were at least three boilers blown up at that well; the rig was pushed in. I have about a four-inch scar on my head where the crown pole fell and just grazed along on my skull.

There is a great deal of "I" in this account, but I wasn't to tell Jim McMahon's experience, or Leslie Denning's, or some of these fellows, because I wouldn't dare to. I am telling mine.

This well at Mt. Morris was started in '83 and finished in '84. It was drilled, I say, a deep well. It was drilled to the Big Island sand because practically all of the wells in that section and in Greene county, and in a great deal of West Virginia, produced from the Big Indian sand. I just want to give you one or two of my experiences. The party for whom I worked for many years drilled a well on the Donnelly farm in Greene county, Pennsylvania, not far from Taylortown, and it was quite a good gas well. There was no market for gas in that country to amount to anything, only for drilling wells. They had not begun to use it at all in their homes, and Wes. Guffey, a brother of Jim—you have all heard of him—sent three or four of his men up there to see this well, with the intention of buying it.

It had a rock pressure of about eight hundred pounds. Myself and a cousin of mine and my brother and another party went over to open up the well for them, and show them what it was, and we went over in a sled. I remember there was very deep snow on the ground. When we got over there we found that the ice had frozen the valve stem—frozen in the top, the cage, and cracked the valve stem, and of course it would not open.

Well, these people had come all the way from Pittsburgh. They advised us to go to Warrentown and get an article to shut the gate off, but we thought we could do something better than that; so we took the casing pole and put it around the gate and loosened it about two threads. Then we tied a rope, lashed a rope onto the end of the casing pole and one of us got at each corner of the derrick, and we would take hold and crawl under the derrick, throw the rope to the next man and he would take and pull and he would do likewise, until we got down to about eight threads, and it stripped those eight threads. But we had lashed the gate with some wire line, so that it could not go clear out of the township. It went up through and hit the crown pole but our line held, and it came back down. When we looked for the men who were there for the inspection, we found they were back almost a

Some men insist it can't be done because they haven't found the way.—Vulcan Bulletin.

come to in the well. One of them came down to me and he said, "I thought that Greene county had some sensible people," he says, "but you are four of the dumbest fools that I ever saw." And I guess he was right.

I want to tell you a little experience I had at Mt. Morris in the early days. We were all in a little group and we got up a little organization called "The Social Club." I wasn't married at that time, so I had a right to come in. And we had a dance every two weeks. We would send over to Morgantown and get the orchestra and have them over and play. The orchestra consisted of fiddles, I think.

There were two or three of them had a dress suit. I never owned one until that time. So I decided that I wanted to look as fine as the rest of them and I ordered a dress suit. And on the night of our wonderful dance, I had on my dress suit, and at that time we had no long distance telephones, but we could telegraph to Waynesburg. There the message would be forwarded. Word came to me that they wanted me at the telephone. Very foolishly, I was all dressed for the party. I went over to talk on the telephone. Mike and John McCool were there, two of the best men I ever knew. They were brothers, great big husky fellows. The telephone was in the bar room. There was a bar. That is, they didn't sell anything, while you could get plenty of it at the distillery. I was talking on the telephone and John and Mike came up behind me and claimed to be admiring my coat, but in reality they took hold of each side of my dress suit and simply tore the coat off me. Mike said, "Well, John, if you don't have any more sense than to come to these places with that kind of a coat, that is the result."

After that, fortunately, they were doing some drilling for the company that I represented, so I went over to Morgantown to the highest priced tailor we had in that county, and I got two suits out of them and an overcoat and had the bill sent to me, and I never heard of it afterwards. (Laughter.) But they had to pay that because I had something to do with the contract.

I must have one more little statement to make and then I am going to take no more of your time. This is an American town, Ponetown, West Virginia. He wasn't born there, but he goes. He used to go there a good deal.

I went to Ponetown on my first visit to Mrs. Wilson. Mrs. Wilson kept the hotel. Wilson, her husband, ran a little mill. He always ate with his hat on. Never took his hat off.

The first night I was there for supper, you had to go out through the kitchen to get to the dining room, and in those days they made apple jack in that country, lots of it, and as I was going into the kitchen there was a little shelf there, and Mrs. Wilson says, "There is a bottle of apple jack, take a drink, it will give you an appetite for supper." I said, "No, thank you, Mrs. Wilson, I don't drink." She says, "What?

Don't drink? My goodness, you never have any fun, do you?"

Well, now, here is one thing that makes me swell out with a great deal of pride.

Mr. Hukill, the man I was with, wanted to take up a body of land around Homeland, and it is unfortunate that he didn't keep it, because it turned out to be wonderful territory, and it is producing yet, isn't it, John?

I went up there on the first day of July. It was harvest time. Well, I could talk to the farmers, and they would not leave. They would like to leave but they hadn't time, they kept on with their work and I walked around with the man that was cradling wheat, and with the mowing machine, but I couldn't do any good. So on the second day of July it rained, rained, rained.

Mr. Wilson says, "You'll see one harvest a time in Ponetown tomorrow." He says, "Cannon Shriver is running full time now making apple jack. One of the tenants is making it," he says. "You will see a wonderful time."

Well, I went to Cannon Shriver. He was a notary public. I said, "Cannon, you don't know a man only fifteen minutes until you know him by his first name. If you called him 'Master' with the last name, he would not talk to you at all." I said, "Cannon, they tell me that there will be a lot of people here today, and I want to lease their farms. Now, the customary price is fifty cents for a lease, weighing leases. For every man that you bring in to the store, I will give you a dollar to take his acknowledgment."

I started in about eight o'clock, and I stayed on that bench until after nine o'clock that night, and all I had to eat was a few crackers, and I wrote leases for Mr. Wilson acres, and it has never been equaled, or at least I never have found anybody doing it. Some of the farms were fifty acres, some were some of them were six hundred, but I want to tell you right now that I wear the leaving business. (Hearty applause.)

HENRY L. DOHERTY DISCUSSES GAS SITUATION

WHEN the public takes the advice of the state utility commission instead of expecting the commission to take the advice of the public, then and there is no chance for the full benefit of intelligent regulation to be realized. Henry L. Doherty, head of the Federal Doherty Agency and president of Cities Service Company, told the National Association of Railway and Utilities Commissioners at their annual convention here recently. Mr. Doherty said that the progressive public utility regulators and companies want intelligent regulation and that they do not want to deal with the public.

In his closing remarks on regulation, Mr. Doherty said that it is the utility companies themselves who are to blame for the fact that a large part of our citizens

Diplomacy is frequently wasted, but it more often wins.—Vulcan Bulletin.

still think it is the duty of the state commissions to give the public service companies hell instead of justice." Reviewing the period of regulation without responsibility through which the public service companies have passed, Mr. Doherty said that agitations for reductions in rates were formerly "a daily diet but an infrequent accomplishment," and that in the old days "a bill or ordinance would be passed which was generally intended by the agitators to be so drastic that it could not be accepted, an injunction would be issued, and then, after a long and expensive legal battle, the courts would be compelled to declare the rate confiscatory and the issue would still be alive as the basis for another political campaign.

Leading up to the question of jitney competition, the speaker called attention to the fashion which developed creating regulatory bills and legislation for public service commissions. "The public," he said "told the public service companies, 'we are going to recognize you as a necessity and natural monopoly, but if we do this we must regulate your service and earnings'." "This work," said Mr. Doherty, "was hardly under way before the street railways of the country were subjected to the rottenest and most unfair competition. I refer to jitney competition". "The jitney," he continued, "runs only when it pays to run, when it takes from the regulated street railway a large portion of the cream of the business, which the street railway companies depend upon to compensate them for the regular schedules which must be maintained in the hours of light traffic when cars are run at a loss."

Mr. Doherty called attention to the necessity for the adoption of a fair method of profit-sharing, suggesting the adoption of a standard rate for utility service, with the understanding that all profits above a certain fair return upon the capital invested in the business, be shared on a dividend basis with the consumers of the service provided.

Mr. Doherty championed the theory of control by State Commissions and criticized the division of authority now existing between the state commissions, City Governments and State Legislatures. He said, "If it is necessary to reserve any control for the citizens of the city or the municipal government then this control should not be of a character to prevent the utility from functioning. I know the cry of home rule is potent, but it should not prevail with thinking people in this instance. One might paraphrase and say, 'Home rule, what economic crimes have been committed in your name!'"

Mr. Doherty suggested that the taxicab business in many of our American cities be declared a public utility, a monopoly, and schedules accepted that would produce real service. "Such regulations," he insisted, "would distribute taxicabs which now congregate in the congested districts to the exclusion of the outlying districts so that when taxicab service is necessary it would be available. Incidentally he said that the average length of taxicab rides would be less.

He also suggested that in our highly congested cities such as New York, thought should be given to the problem of treating the delivery of goods and wares as a public utility, the reason being the diminution in the cost of distribution to the public and the lessening of congestion in city streets. Mr. Doherty emphasized the necessity for the adoption of service charges on a standardized basis or on the basis of readiness to serve. This readiness to serve method of charging, he explained, distributes the cost in a fair and equitable manner to every customer of a public service company, and in the long run is fairer not only to the company but to the customer as well.

"As far as methods of charging are concerned," explained Mr. Doherty, "there is no hint or suggestion of any better method being found in gas or electricity than the readiness to serve method."

"Many gas companies face a gloomy future unless there comes the adoption, to a large degree, of the principles of the readiness to serve method of charging. The system of charging for gas purely on the basis of consumption is too inequitable to waste time or in discussion. We found that under the stress of war conditions, rates based only on consumption had to be used in many cases not simply as a matter of justice but as a matter of necessity. If a customer is paying you \$30.00 a year for gas under the old system and under the new would pay \$15 as a readiness-to-serve charge, and then get his gas at half the present rate, it doesn't take much imagination to realize the stimulation this will give to sales."

GREAT OIL DEVELOPMENT

The American Petroleum Institute in a recent Bulletin makes the following interesting statement regarding the oil production interests in the United States.—Editor's Note.

WHEN Col. Edwin L. Drake, the oil pioneer, drilled his first well in this country and produced a maximum of 25 barrels a day, the world was using fats and greases for illuminating and lubricating purposes and the automobile was unknown.

Today there are more than 14,000 oil producers in the United States, operating more than 275,000 oil wells. Their production is at the rate of more than 1,500,000 barrels a day.

The oil industry, under the impulse of the demand created by the internal combustion engine, has attained this great growth, necessary to satisfy the demand for its products, on a foundation of commercial and economic freedom.

When Col. Drake started to drill his well, he found no ownership of oil, no combination of interest, no impediment in the holding of lands which would block his efforts to produce oil. So the situation stands today.

The entire country is open to the prospector and there is none to say who may or may not produce oil.

Get used to this: Turning up with a smile—and smiling even when you are turned down.

A. G. A. Convention

*1922 Convention of American Gas Association Presented Many Features of Interest
to the Natural Gas Industry — Of These Several
Are Reprinted Here*

LEARNING FROM OTHERS

It is no disgrace whatever to acknowledge that in certain lines others may have through earlier, or perhaps even broader experience in certain directions learned more of the way things can be done to advantage, than have those who have come later on, and it is upon this general principle that we quote to our natural gas readers from addresses delivered before the American Gas Association at its convention held in Atlantic City in October, a gas field in the natural

of the matter we quote has a direct bearing upon as to the natural gas field as they exist today after has a bearing upon the situation as it exists in companies that are no longer depending entirely upon natural gas for their supply, and to still other gas companies that will be finding a part of their manufactured product, either taken from coke gas and purified and then mixed with natural gas, or from the company's own gas manufacturing plant mixed with natural gas. The following in certain cases have been quoted in full, in others they are somewhat briefed. These matters taken from the address of the President, "Publicity and Engineering," "Sales Stimulation," "Selling the Gas Bill," "The Meter." Many gas companies in the "manufactured" field conduct gas appliance sales departments

are also reprinting from the *Manufactured Gas Magazine* for November, "Manufactured Gas vs. Natural Gas." These will be of interest to many of our gas men. The Editor.

THE CONVENTION

If registrations ran over 2,000, the largest attendance ever, and none at any time has been more representative. Gas men literally flocked in. They came from all directions and it was notably in evidence. This to our mind is that the Western man cares to come East for the sake of scene and atmosphere that is his for the time. Some have said that the Westerner will not come to these conventions unless held in the West as in the East. Such might be the case under conditions, but who does not like an entire change at least once a year, and surely such was found

at Atlantic City by the gas folk who attended this A. G. A. convention of 1922.

Atlantic City is neutral ground, it is not the East and it is not the West, not an Eastern city nor a Western City, it's "no man's land," it belongs to the Westerner and to the Easterner, a peaceful "no man's land," however. At Atlantic City it was found that more than elsewhere attended the meetings and examined the exhibits, thus making the hearts of the exhibitors glad.

It was claimed by many that in Chicago or New York, where there are an infinite number of distractions, "the Call of the Wild" as it were, is so strong, that many a heart responds.

The air of the seaside was bracing and kept the men all fit and in trim, the *lazy feeling* man of other convention locations was hardly to be found. There was the atmosphere of "Make it Snappy" in everybody, and every thought and action.

Many were heard to say that either regularly to meet at Atlantic City, or two years there and one year West, thus two years in the East where at least two thirds of the membership is found, and one year West, a turn about of two to one, with Atlantic City the regular Eastern meeting spot, would ensure large attendance at all meetings.

Atlantic City having hotel accommodations unequalled, two great piers, and a personality and environment not found elsewhere, challenges the world as a meeting place.

The ozone in the sea atmosphere of Atlantic City did its part to make profitable the convention sessions. It was a great relief to have opportunity to fill one's lungs with good pure air at intervals instead of remaining indoors day and evening as has been the case with many where in the recent past the living, the convention sessions and the exhibition were all in the same building.

The walks and rides on the Boardwalk were much enjoyed, as was likewise the sailing that various "parties" took advantage of.

The ladies in attendance were frequently seen in the shops along the Boardwalk. Many of these ladies not having before visited Atlantic City found the shops of especial interest.

The Steel Pier presents a most favorable opportunity for display, and the Association under its able

Finish this: Every job you tackle.

executives and assistants took advantage of the fact, to hail the public stopping at Atlantic City during the period of the exhibition, inviting them to drop in at the Pier and acquaint themselves with the cleverness of the appliances shown by the various gas-appliance manufacturing concerns, appliances that are available as household, and other forms of comfort and convenience.

As one entered the first auditorium which faces the Boardwalk, he found directly before him the registration desk, thus each member before proceeding further, registered his name and hotel address, thus immediately making it possible for his hotel location to be known to those who might desire the information. The registration-matters were handled in a thoroughly systematic manner, whereby the large number attending were quickly and satisfactorily cared for.

The exhibition spaces in the first auditorium, the one facing the Boardwalk, ranged from No. 1 to No. 48. In the second auditorium, possibly forty feet distant from the first, were located booths ranging in number from 100 to 145.

In the third auditorium were found the booths numbering from 200 to 261. The fourth auditorium, the one at the extreme ocean-end of the Pier, was utilized for the general sessions and such other like proceedings as were designated to take place in that building.

In Vernon Room at Haddon Hall, but a short distance from the Pier, there were held the Commercial and the Advertising and Publicity Section sessions. The room is very beautiful and lent itself admirably to the gatherings of the Commercial and Advertising forces.

The matting aisles, the decorations, the well placed green plants turned the more severe and plain surroundings into a thing of beauty, attractiveness and effectiveness. There was nothing ornate about it. All was in good taste, nothing to detract from the exhibits. As A. P. Brill, one of the exhibition committee said, "I have long stood for no rails in front of the booths and you will note that they are done away with." Others have had a like feeling and as it has been the intent that those attending should enter the "enclosures", it is an improvement to have the spaces or booths surrender the "enclosure" idea in their lay-out.

A miniature gas-works in full operation, occupying an area about thirty feet in length and a miniature model all-gas-residence fully equipped with miniature gas-range, gas water-heater, gas-mantle, lights, etc., this house occupying a corresponding area of about thirty feet in length formed the two composite attractions. These attracted very general attention and pleasing comment.

The general public was admitted upon but two occasions. Here we feel full opportunity to make the most of a wonderful country-wide personal-publicity campaign

was somewhat missed, for the public will not in full force attend any showing where the opportunity is limited. The public is like a man who "*wants what he wants, when he wants it!*" The public wants to drift in as it feels inclined, especially the public with means, such as is found at Atlantic City hotels from the country over, at this time of year.

Atlantic City presents the greatest national personal-publicity opportunity of any location or city in the world,—publicity worth many upon many thousands of dollars, free for the taking, if one will, under circumstances such as we are recounting. Outside attendance was good, but the most was not accomplished so far as nation-wide attendance from the hotels was concerned.

The gas-men spent more time in the convention sessions and in the exhibits than at any former convention. Atlantic City was largely responsible for this since the outside day-time attractions were not competing for attention as is the case in Chicago and New York.

This condition means thousands of dollars of advantage to the appliance man showing his wares, and to the gas companies sending men to glean all possible from papers and especially word-of-mouth discussions, as well as from the exhibits. We believe a volume is said in this paragraph in favor of often going to Atlantic City with this National Convention and Exhibition.

"Where next?" was the universal question, showing deep interest in this matter, versus indifference to no small extent as in some previous years.

Various Western men said, "It means less to the Western man, this coming West frequently with the A. G. A. convention, providing the meeting-place is made Atlantic City often." That seashore place is more largely a Western man's Mecca, than is it a resort of the Eastern man, and yet all delight to go there. "It makes the convention more of a family affair, this going to Atlantic City," said one Western man, adding, "Our wives went with us when we went there, and they will see to it that we do go, when the magic name, 'Atlantic City' is spoken in future."

Another Western man said, "Come west say once in three times, and go to Atlantic City two times out of three; that would suit us."

Another man said, "Atlantic City one year, half way between Chicago and New York another year and Chicago a third year; then repeat the round, thus all would be suited."

Another said, "No big city for me if I am to get the most out of the sessions and the exhibits."

"No more foul air in close quarters will suit me, after that fine air at Atlantic City; that's the place."

Many more statements of like nature could be recounted, but these are a few excellent samples and after those at home who did not go, hear the story from those who did attend, it will take a team of oxen to keep them home when Atlantic City is named for another A. G. A. convention.

The will to work and the spirit to save produce the prosperous citizen.—NCR News.

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the 1990s, the average cost of a new car was \$15,000, and the average cost of a new house was \$100,000. The average cost of a new car in 1990 was \$10,000, and the average cost of a new house in 1990 was \$70,000. The average cost of a new car in 2000 was \$20,000, and the average cost of a new house in 2000 was \$120,000. The average cost of a new car in 2010 was \$25,000, and the average cost of a new house in 2010 was \$150,000. The average cost of a new car in 2020 was \$30,000, and the average cost of a new house in 2020 was \$180,000. The average cost of a new car in 2030 was \$35,000, and the average cost of a new house in 2030 was \$210,000. The average cost of a new car in 2040 was \$40,000, and the average cost of a new house in 2040 was \$240,000. The average cost of a new car in 2050 was \$45,000, and the average cost of a new house in 2050 was \$270,000. The average cost of a new car in 2060 was \$50,000, and the average cost of a new house in 2060 was \$300,000. The average cost of a new car in 2070 was \$55,000, and the average cost of a new house in 2070 was \$330,000. The average cost of a new car in 2080 was \$60,000, and the average cost of a new house in 2080 was \$360,000. The average cost of a new car in 2090 was \$65,000, and the average cost of a new house in 2090 was \$390,000. The average cost of a new car in 2100 was \$70,000, and the average cost of a new house in 2100 was \$420,000.

[illegible][illegible]

the 1990s, the number of people in the world who are under 15 years of age is expected to increase from 1.1 billion to 1.5 billion. The number of people aged 65 and over is expected to increase from 200 million to 400 million. The number of people aged 15 and over is expected to increase from 3.5 billion to 4.5 billion. The number of people aged 15 and over is expected to increase from 3.5 billion to 4.5 billion. The number of people aged 15 and over is expected to increase from 3.5 billion to 4.5 billion.

Leaders are ordinary persons with extraordinary determination. -Hurty Peck Idea

self an individual and not one of a mass. He wishes his case to be considered apart from others. His desire is to go to the man directly over him and discuss his particular case and get a decision then and there. Small companies with an executive who knows all the men, has the authority and is in touch with each individual and can settle and take care of cases as they arise, seldom have serious labor troubles. As General Grant has said, "The best government is autocratic when the autocrat is a good man." I believe that industry as a whole has made the grievous mistake of not giving more responsibility and more authority to superintendents and foremen. They have as a rule tied him hand and foot in handling their men. In most industries and particularly the gas business the foremen are men of long years of service and are tried and true and are able to handle the men under them if given the authority. Of course certain policies must be laid down by the management and conferences of the superintendents and foremen are necessary in order that their decisions go along parallel lines. One of the principal factors in giving superintendents leeway of action is the provision for advancement of men who show merit, and the main feature in this provision is graduated scales of wages depending on length of service and upon skill of performance and in cases where I have known this to be tried it has resulted in very much improved morale.

I am going to yield to the temptation of citing one of our own experiences along this line. A year ago we made an arrangement with Boston University to conduct classes for all of our employees who in any way came in contact with the public. Over four hundred of our employees took this course, which consisted of two hours a week for eight weeks and the classes were held in the daytime, the employee being relieved of his duties so that he might attend. Business principles and business ethics, the gas company's place in business and its relation to the community, salesmanship, courtesy, good will, good workmanship and co-operation are some of the outstanding subjects included in the course, the whole purpose of which was to build the foundation for better business by contributing our part toward the building of better employees. Our business in all its branches needs humanizing and we believe that educational work of this character will go a long way to accomplish it, and we are so gratified with the results so far attained that this winter we expect to have an advanced course which will include salesmanship, economics, industrial relations, efficiency and economy of operation, as well as a lecture on the Constitution of the United States, which we believe everybody ought to know more about. We feel that education begins at home and that in giving our employees this opportunity we are providing the best means for educating our customers and the public and putting our business more solidly upon the foundation of public understanding and good will.

The industry today is approximately one hundred years old. The common expression is "the first hun-

dred years are the hardest". Certainly it started wrong in the gas business in regard to the question of rates. We are now beginning to see day-light in a scientific basis of charging for gas and I cannot do better in discussing this subject than to quote an article by R. B. Brown published in the Association Monthly for August in which he says,—"No sound basis for the future development of this great industry can be established which does not include a thorough appreciation that the cost of service must be reflected in the rates granted—an opportunity must be given to adjust commercial or quantity rates without an undue amount of red tape being unwound—enough latitude must be provided in the regulation of quality of gas furnished to allow modification of processes and use of materials not available under most of the existing regulations, and finally, recognition must be made of the principle that the best talent and initiative cannot be kept active in the service of this industry under any system of returns which deprives the workers in all ranks, as well as the investor, of any reward for better than usual operation and service to the public."

The advance the gas business has made in the last four years has to a very large extent been fostered, helped and promoted by the work of this association. It has been operated efficiently, economically and effectively and I wish to take this occasion to say that notwithstanding its excellent organization and the valuable personnel of its headquarters staff, great credit is due to the energy, personality and ability of its Secretary-Manager, Mr. Oscar Fogg. It gives me pleasure to say this, not only as a personal friend of Mr. Fogg, but also as retiring President of your Association.

PUBLICITY AND ADVERTISING

ADDRESS OF THE CHAIRMAN
A. A. HIGGINS

THE Publicity and Advertising Section has again enjoyed a year of splendid support from the industry with the result that we have been able to accomplish most of the things we set out to do and can now look forward to the time—and it will not be far off—when our industry will be held in universal esteem by the gas consuming public due to a better understanding of our aims and objects.

We have made the first leg of a long journey. Whether we will reach the end or not and reap the advantages which await us there, depends upon our persistence in sticking to a policy which decrees that the industry cannot be prosperous at the expense of its relations with the public. Our house is in better order at the present time than it has ever been before. Let us keep it so. But let us remember that the kind of friendship we are building with the public cannot be done too quickly—and now that we have attained some results worth while, let us not relax in our little victories but press on to the bigger ones that are ahead.

The thing that matters is what you think of yourself, and that you believe in yourself—Beffel

year's work has been marked by several outstanding features which deserve mention. Stated they are:

more intimate contact with the public established by the effective use of a large number of newspaper publicity outlets

requent talks and illustrated lectures on the gas as before audiences largely composed of gas users, resulting in a clear understanding of the function in our domestic and industrial life employment of experienced newspaper men to public relations work This is a movement in its infancy, it should be greatly encouraged selling of securities to customers, which is having beneficial results in bringing about a better standing of the fundamentals of the utility business

large amount of newspaper advertising continued for and used with marked effectiveness by the number of gas company and appliance makers history of the industry, illustrating the depreciation of this modern form of selling.

continual expansion of state committees on publicity information, with eighteen such committees ration and their work reaching into 26 states Union a movement of vital consequence to the industry.

use of motion pictures to carry the gas message to the public, and it has been carried with great success

the quality of the direct-by-mail literature; better letters and a quickened commercial sense has placed the industry on the alert and made it more responsive

recognition on the part of our industry that we in our own employees an excellent medium distributing information and the training of employees to properly represent us

we are the "tools," so to speak, that the industry has at its disposal There is no apparent necessity for new ones If we will continue to recognize the importance of newspaper and magazine publication favorable to the industry and strive to increase the amount of such publicity, if we will continue paid advertising in greater volume and strive to make it carry more effective commercial and good messages, if we will meet the public openly and tell the facts, by word of mouth, by means of talks and motion pictures if we will do these few things, and do them conscientiously and properly, we will forever end misunderstanding and misapprehension.

During the past year we have prepared and distributed several hundred thousand copies of educational pamphlets and we will keep this good work up as we have ample proof of its success We have started a new advertising service of most possibilities, at a time when the industry is making a new advertising history for itself.

SALES STIMULATION

In Part on Address

BY WILLIAM GOULD

Chairman of 1927 Committee

American Gas Association

IN preparing sales suggestions for every month in the year, it was necessary to have an experienced man with vision broad enough to take into consideration the needs of the smaller companies

As an industry, we advertise and tell the public that ours is a 365 $\frac{1}{4}$ day a year business, that we are always on the job, that is, we are always making gas, which is very true, but are we on the job 365 $\frac{1}{4}$ days in the year in our Sales Department?

Emphatically No! Now just as emphatically, Why Not? And what are our reasons for saying so? Let us ask ourselves a few questions When do the manufacturers' salesmen have their lay-off or vacation? Answer In the Wintertime Why? Because business is slack at that time Why? Because Gas Companies are not ordering anything Why? Because they are selling very little Why? Because they are not on their jobs 365 $\frac{1}{4}$ days a year, and think the Winter is the slack selling-time for gas appliances, and the sad truth of the matter is, that it generally proves out as they think, but it also proves to be just as busy a selling season as any other period, if they think it is and want it to be.

Does it just happen that in the companies where the Winter is considered the dull season for appliances, that it is also the poorest for gas output, or is it a natural result? We personally believe it is a natural result, for can we expect our customers to continue to be interested in using appliances, when the gas company has almost ceased sales efforts until the Spring and Summer come again?

The office force meter readers bill-collectors and the whole works in one endeavor to put across the sale featured, will eventually be the kind of practical co-operation that will develop a company and give the right kind of service to its customers Gas may only be used or sold through appliances consequently the more appliances sold by the entire organization, the bigger the company will grow Every gas company, no matter how small, has a latent selling force in its employees other than salesmen, which if it could be brought to bear on the situation would materially increase the development of that company to amazing proportions Enlist your whole organization in this developing campaign The most important time to speed up sales efforts is to our mind at the time when people are returning from vacations and are getting ready to settle down in preparation for the Winter this is generally in September

In selling our appliances, are we telling the purchasers much about them other than the price? Are

to find a short road to success would make good epitaphs for the vast multitudes of failures

we showing them in a fair way what they are receiving for their money other than the metal in the appliance? Every one of us continues to spend our money at the places where we feel we get value received. In every personal purchase we are nearly always assured of its value to us, as represented by the money we pay for it. Are we salesmen of the Gas Companies making our customers feel assured that when they pay \$50.00 or \$100 for a range, they are receiving full value? We would suggest that we think more on this question and not allow any of our customers ever to be suspicious of the value they are receiving, and along this line want to make another suggestion. A very conservative estimate of the life of a gas range is ten years. A \$50.00 range, therefore, is costing your customer \$5.00 a year, or less than two cents (2c) a day. Don't you think they are worth it, and do you not think if this same argument was applied to all our appliances that maybe our customers would be a little

more assured of the value of them? Two cents a day for a modern up-to-date cooking range is rather a better way to really appreciate it, than to let them think of their parting with \$50.00 and giving very little if any consideration to the range's ten year service ahead.

Another suggestion—If the output of gas depends on the number of appliances sold, why shouldn't the sales department be interested in the output of gas, as well as appliances? To our mind they should be interested in the sales of gas and every month should keep in touch with it, as well as often knowing the daily and hourly output. In every gas plant they are able to tell how much gas they make every hour, or every day, but have to wait until meters are read at the end of the month, and what isn't metered is the unaccounted for, but what day of the week or hour of the day it has been used is a question.

Selling the Gas Bill

BY A. C. FULLER

Prest. Fuller Brush Co., Hartford, Conn.

At the American Gas Association.

IN looking over some of the literature published by the American Gas Association, I have observed that the various gas companies recognize, as I presume almost all public service corporations do, that there is on the part of the public in general a certain lack of confidence in public service corporations as to their making a fair charge for the service rendered. I believe that if you were to ask any one of these objectors about the bills rendered to them for service of this kind, they would be unable to give any definite or concrete reasons for their objections.

We find practically the same condition in regard to the question of taxation. The bill that the man objects to most strenuously is usually his tax bill. I think this is due to the fact that when a person pays out a given sum of money, he likes to receive something tangible for the amount he has expended. Viewed from this standpoint, I feel that if the gas companies could sell their product in a package over the counter, which a person could take home with him and use, there would not be the same objections raised to the gas bill. I am, however, rather too practical to recommend that the gas companies attempt to reduce this idea to practice.

There is a lack of knowledge and understanding on the part of the public as to what value they get for the money spent for the gas which they consume. Therefore, it resolves itself into a question of education on the part of the gas company and perhaps no one realizes more clearly than I the magnitude of the task of educating the public on questions of this kind.

The Bell Telephone Company, I have observed, has spent a great deal of money advertising in the magazines to educate the public as to the tremendous equipment and mechanism that is back of their telephone service. Also the large meat packing houses have found this means necessary to counteract or offset antagonism that has been brought against them, chiefly by politicians who were desirous of making some political capital. No doubt this same question of politics enters into the lack of confidence of the people in their public service corporations in local municipalities.

I am not in a position to judge or advise whether a broadcast advertising campaign would be of benefit in this case. But I am very much inclined, knowing the power of advertising, to believe that it would be of material help if the expense would be justified by the end.

In such advertising also the promotion of use of gas could be brought home to the public in an emphatic manner. It seems that the gas companies, at

To discharge responsibilities, become loaded with knowledge of them.—Forbes Magazine.

least in some sections of the country, have not lived up to the possibilities of selling the public on the use of gas to its widest possibilities. An appreciation of the value of gas would in itself tend to overcome some of this criticism and justify the worth of such an advertising campaign.

I am very thoroughly convinced that the average consumer of gas does not expect his public service corporations to furnish service without making a reasonable profit. Their objections lie in a mistrust which is founded on nothing except blind suspicion and which has been brought about, no doubt, by criticism of a more or less prejudiced nature that has found its way into the newspapers.

I have always been a strong believer in the impossibility of any injury or embarrassment from unjust criticism. In other words, if a company is operating on a basis of fairness and equality towards customers or clients it has little to fear in the long run from unjust criticism. I believe that the majority of users of gas or any other service rendered by public corporations are satisfied that they get their money's worth.

At this point it might be well to offer this suggestion—that the gas company have a service man or department whose business it is to adjust the complaints at the point from which they are received. I think it would be helpful if such a service man offered to call upon the person entering the complaint in regard to his or her bill. The service man would make an investigation and explanation. In this way it would be very easy for the company to turn a disgruntled customer into an enthusiastic friend. It would probably be the best means of renewing confidence on the part of the customer who thought he had some grievance. Once a company establishes the reputation of a desire to adjust and give satisfaction in place of any dissatisfaction with their service or charges, most of the criticism that is brought against them is allayed.

In viewing the situation as one of the general public, I think that the chief reason why there has been a lack of co-operation as a monopolistic institution without control confidence is because the people regard a public service from any source enabled to make charges and impose rules as they see fit whether fair to the public or otherwise. It seems to me that if means can be had for re-assuring the public on this point, by a sympathetic attitude and every possible effort to satisfy direct complaint it would go a long way toward solving the question of "Selling the Company's Gas Bill."

I have observed in the association literature which I received, a booklet entitled "The Man Who Makes Friends" for distribution among the employees. This booklet seems to be written in an excellent manner and covers the important points for the education of

an employee. I, of course, do not know what other means have been taken by the individual companies to this end. But from my own experience, in dealing with a large organization, I regard this matter of the education of the employee and of using every possible means of securing their confidence, loyalty and co-operation as the most vital factor in industry today.

In my own Company we have tried and have worked out successfully various ways and means of accomplishing this, the most definite and tangible of which is a system of bonuses to employees after they have reached a certain position with the Company and have proved their worth.

We believe that once an employee has demonstrated his loyalty and worth, the next move is up to the Company—to find ways and means of compensating him and by this means insure a more intensified loyalty and co-operation for the future.

The great majority of men who work for a Company, I believe, are only too anxious to show their co-operation and loyalty if they feel it is recognized and appreciated. I do not believe proper appreciation can be shown in any way except by additional compensation. As a matter of fact it is the only fair thing to do; because if we expect extraordinary service, co-operation and loyalty without paying for it, we are just as bad as the employee who expects big pay for poor service on his part.

We hear a great deal about "war time wages" and wages that are too high to enable a Company to make reasonable prices in return to the public. My observation has been that the greatest waste in industry today is the waste through inefficient work on the part of thousands who are employed. This inefficiency is due to a lack of recognition, encouragement, and proper compensation for extraordinary service rendered.

From an economic standpoint, therefore, it is not a question of the dollars of wages paid, but a question of what the employer gets for the money that is paid. I believe that a close study of this proposition and its solution will solve practically all of the problems in any industry.

Any corporation is absolutely dependent upon the people who work for it. The lack of attention given to this phase of business is to my mind, the cause of most of the troubles in industry today.

It is a mistake to regard labor as a commodity to be purchased at a standard price without thought or interest on the part of the management as to the ways and means of helping these employees to establish themselves on a basis of permanency and a greater compensation. This is not simply by handing out bigger compensation but rather by finding ways and means of enabling them in their positions in your in-

One of the best things a salesman can learn is how to make a long story short

dustry to make more of themselves and to render greater service. I find it is a very easy matter to do this because the majority of men are ambitious for this very thing and it is the easiest thing in the world to stimulate. Any business should be broad enough in its field of operations to enable its employees to make a permanent and profitable place for themselves in that field.

My Company has worked out a system of bonuses which is based on greater effort and production on the part of the various individuals. It has confined entirely the Common stock of the Company and most of its Preferred Stock to employees so that today men who are connected with the Company have the entire investment of about two and one-half million dollars in their hands. We have, therefore, a great element of strength in increasing compensation, increasing responsibility and ownership, which makes a unit of our entire organization. This makes anything but progress impossible.

The sales of our Company have increased since 1918 from about \$450,000 to over \$7,000,000. This result has been brought about to my mind only through this system of getting and retaining the co-operation of all units in the organization.

The nature of our business is such that it requires the organization and training of large numbers of men. The total number employed in the manufacture, distribution and sale of our product is over four thousand men. My object in quoting these figures of sales is to indicate the growth of our organization since 1918.

This growth evidences the fact that this policy has worked with tremendous success in our own organization of several thousand men spread all over this country and Canada.

I believe that by this means the tremendous industrial waste of strikes could be saved.

In our own industry it seems to me that all of these things apply and that the particular problem under discussion can be largely overcome through this means of enlisting the complete co-operation of your employees and finding ways and means to compensate them properly for extraordinary effort on their part.

It is very clear to me that the building up of a national sales organization as well as that for the manufacture and distribution of our product in such a short period of time resulted from using every means possible to enlist the complete co-operation of all those connected with the organization. I do not believe that this is peculiar to our own business. I do believe that in all industry it would be the soundest economic policy to give this question of more completely organizing and developing the goodwill and co-operation of employees closer attention and study.

MANUFACTURED GAS INDUSTRY

Statistics for Year 1921

By Courtesy of American Gas Association

The following general statistics are compiled by the American Gas Association in part from returns made to the Association by 492 gas companies and extended by estimate and information derived from various sources to the manufactured gas industry as a whole. They are presented as approximate only.

Number of companies in the United States engaged in supplying manufactured gas to the public. (Note: Where a producing company sells its product to another company for distribution to the public, only the distributing company is counted.)

Alabama	13	Maine	12	Oregon	11
Arizona	10	Maryland	14	Pennsylvania	84
Arkansas	1	Massachusetts	58	Rhode Island	8
California	53	Michigan	53	South Carolina	8
Colorado	10	Minnesota	19	South Dakota	8
Connecticut	25	Mississippi	8	Tennessee	8
Delaware	6	Missouri	24	Texas	16
Dist. Columbia	2	Montana	5	Utah	3
Florida	16	Nebraska	18	Vermont	9
Georgia	16	Nevada	2	Virginia	16
Hawaii	2	New Hampshire	11	Washington	12
Idaho	3	New Jersey	36	West Virginia	3
Illinois	64	New Mexico	2	Wisconsin	39
Indiana	45	New York	91	Wyoming	2
Iowa	55	North Carolina	20		
Kansas	6	North Dakota	5		
Kentucky	9	Ohio	18		
Louisiana	4	Oklahoma	1	Total	964

(Included in the above are 48 municipal plants supplying manufactured gas to the public.)

Number of coke oven plants selling gas to distributing companies..... 84

Number of companies distributing gas manufactured by the processes stated. (Note: Where a producing company sells its gas to another company for distribution to the public, only the distributing company is included.)

a. Coal gas plants.....	208
b. Water gas plants.....	415
c. Oil gas plants.....	76
d. Mixed gas:	
Coal and water	156
Water and oil.....	3
Water and coke oven.....	3
Coal, water and coke oven.....	2
Coal and oil	1
Coal and natural	3
Coal, water and purchased.....	3
Straw gas	1
Water and purchased	2
Uncertain	4
Distributing plants (gas purchased).....	87

Total manufactured plants U. S. 964

By-product coke oven plants..... 84

(The above compiled from data published in Brown's Directory of American Gas Companies.)

Number of cities, towns and villages served (estimated)	8,600
Number of meters—Prepayment.....	1,244,900
Ordinary	8,046,100
Total.....	9,291,000
Number of consumers.....	9,200,000
Miles of gas main.....	69,500
Meters per mile of main.....	133
Number of active services.....	6,383,000
Population served	46,700,000

The time to begin to form a new habit or to discard an old one, is NOW.—Wm. Feather Magazine

ESTIMATED PRODUCTION OF MANUFACTURED GAS—1921

	Thousand Cubic Feet
Carburetted water gas.....	206,352,000
Coal gas	62,486,400
Oil gas	26,323,700
Coke oven gas purchased and distributed for public use.....	37,392,500
(Coke oven gas consumed at point of production or for purposes other than public use is not included.)	
Total manufactured gas.....	332,554,600
Natural gas purchased and mixed with manufactured gas for public use.....	27,837,000
Grand total.....	360,391,600

ESTIMATED VOLUME OF MANUFACTURED GAS SOLD—1921

Purpose	Per Cent	Thousand Cubic Feet
Illumination	18.50	60,442,000
Domestic uses other than illumination..	56.71	185,459,700
Industrial	21.62	70,671,200
Other uses not classified.....	3.17	10,378,000
Total		326,950,900
Total Gross Revenue—Sale of Gas.....		\$379,263,044.00
Annual consumption per meter.....		35,190 cu ft.

*COAL AND OIL USED IN MANUFACTURE OF GAS FOR PUBLIC USE

Bituminous coal	7,113,900 short tons
Anthracite coal	1,832,700 " "
Coke	2,412,700 " "
Gas oil	897,968,000 gallons
Domestic cooking appliances in use 1921.....	7,040,000
Water heaters in use—all types.....	1,573,000
Space heaters in use.....	1,268,000
Incandescent burners for illumination not including arc lamps, or street burners).....	8,800,000
Number of persons employed by gas companies as officers, executives and salary and wage earners.....	73,000

*NOTE—These figures do not contain the materials used for the manufacture of the coke oven gas purchased by distributing companies for public use.

*ESTIMATED PER CAPITA CONSUMPTION OF MANUFACTURED GAS FOR THE LAST 20 YEARS

Year	Consumption per Capita	Year	Consumption per Capita
1901.....	1310 cu. ft.	1911.....	1704 cu. ft.
1902.....	1221 " "	1912.....	1882 " "
1903.....	1310 " "	1913.....	1960 " "
1904.....	1383 " "	1914.....	2040 " "
1905.....	1340 " "	1915.....	2067 " "
1906.....	1435 " "	1916.....	2308 " "
1907.....	1514 " "	1917.....	2604 " "
1908.....	1561 " "	1918.....	2638 " "
1909.....	1583 " "	1919.....	2939 " "
1910.....	1623 " "	1920.....	3026 " "
		1921.....	3053 " "

Percent of increase, per capita consumption.....1901—1921,	133%
Percent of increase, per capita consumption.....1901—1911,	30%
Percent of increase, per capita consumption.....1911—1921	80%
Average yearly percent of increase per capita consump..1901—1911	2.8%
Average yearly percent of increase per capita consump..1911—1921	6.0%

*U. S. Census Population Figures 1900, 1910 and 1920 used as a basis for above table.

Increase in population for individual years assumed as 1/10 the increase shown for each 10 year census.

SOUTH CENTRAL MEETING

THE Seventh Annual Convention of the South Central Gas Association was held in the Eastman Hotel, Hot Springs, Arkansas, October 10th, 11th and 12th, and was accounted one of the most constructive meetings ever held by the Association. Generally unsettled conditions and delayed train service, however, caused somewhat of a drop in the attendance as compared with previous meetings.

The Honorable Harry A. Jones, Mayor of Hot Springs, welcomed the delegates with a strong appeal for better relations between the public and the Public Utility. A response to the Mayor was made by Mr. J. S. M. Wharton, General Manager of the Gas Company at Helena, Arkansas.

President F. L. Weisser was unable to be in attendance due to ill health and First Vice-President F. C. Armbruster presided. In lieu of the President's address Sidney J. Ballinger, Secretary, made a short talk presenting the President's views on many subjects of importance.

The first day's program was devoted to Public Relations. J. S. M. Wharton, of Helena, Arkansas, emphasized the importance of consistent advertising in building and maintaining good will. H. Y. Carson, Research Engineer for the American Cast Iron Pipe Company, detailed the policies of his company in dealing with its employees. Mr. Carson explained the importance of well planned, tactful welfare work and the limits to which it might be successfully carried. A. G. Curtis, in charge of the Shreveport properties, discussed the relations of employee and the public, pointing out the great advertising value of each employee and the vital parts they might play in molding favorable public sentiment. Earl W. Hodge, in charge of the Public Utility Information Bureau for Arkansas, made one of the most impressive talks of the day. Mr. Hodge stated that practically all the troubles of the Public Utilities were due to misunderstanding and lack of information on the part of the public. The remedy for this is the Utility Information Bureau which is springing into existence throughout the entire country. Mr. Hodge explained at length the work of these bureaus and how they were reaching out into the schools, churches, civic clubs and elsewhere.

The second day's program was devoted to matters of natural gas production and proved to be a most interesting session. Problems of Natural Gas Production, Drilling and Field Control, was the subject handled by Ben K. Stroud, Department of Conservation, Mineral Division, State of Louisiana. Mr. Stroud's paper was well prepared and received a thorough discussion. Modern Compressor Station and Gasoline Production Processes and Practice was the subject handled by Messrs. N. M. Nowery and R. J. Zuberier of Shreveport, while Orifice Meters, Correct Registration and Pulsating Line Pressure was handled by J. Diehl of Tulsa, Oklahoma.

The man who can control himself has little trouble overcoming obstacles.—Vulcan Bulletin.

The third day's discussion was in connection with distribution problems, handled by C. M. Thompson of the Waco Gas Company, Mr. Carson of the Cast Iron Pipe Company and H. F. Baker, Manager of the Arkansas Fire Prevention Bureau at Little Rock.

One of the important matters to be considered by the Convention was an invitation of the Southwestern Electrical and Gas Association for a federation. After considerable discussion the gas men voted their approval of this program and authorized the President to appoint a Committee with full power to act.

Mr. Fred C. Armbruster was elected President of the Association for the coming year. Sidney J. Ballinger was re-elected Secretary and Treasurer. W. A. Darter was made a new Director and the other officers were progressed in line with the usual custom.

RAPID PIPE LAYING

WE are informed that the pipe line construction going on in the neighborhood of San Antonio, Tex., is progressing by leaps and bounds. Mr. R. B. Lloyd is in charge under contract given to the Hope Engineering and Supply Company, who are constructing the line. On Monday, October 9th, the outfit laid six hundred and thirty joints (twelve thousand feet) of twelve-inch pipe. This excels the achievement of a week previously, which was eleven thousand feet in one day's work, the company thus beating its own earlier fine record.

For the Hope E. & S. Company, contracts covering from thirty to one hundred miles are matters of practically no especial moment, and yet such contracts are not to be sneezed at, though when a big contract comes along and the company acquires it, then there is especial rejoicing in the camp of the Hope outfit. No contract, it would seem, is too large to be well handled by that institution.

Mr. R. S. Lord is President of the Hope Engineering and Supply Company and is well assisted by his son Paul Lord, who is now in charge of a temporary office made necessary by a thirty-mile contract terminating at Landor, Wyo., which is now under construction.

At Thermopolis, Wyo., a natural gas line is being laid, and for the Bolton Oil Co. the Hope Co. is putting in thirty miles of six-inch gas line from Bolton creek to Casper, including a pump station, the latter work being in charge of Mr. H. W. Harmon, formerly with the Ohio Fuel Supply Co. Other contracts in the hands of the company include sixty miles of six-inch oil line from Fort Steel, Wyo., to the Lost Soldier oil field, with two pumping stations, for the Producers and Refiners' Co.; for the same company, a gasoline recovery plant at Casper with a capacity of 7,500 gallons a day, and another at Riverton with a capacity of 1,000 gallons a day; a gas compressing station in Oklahoma, near Caney, Kan.; three gas compressing stations at Breckenridge, Texas (a 5,000

gallon gasoline recovery station being now in operation there), and a gasoline recovery station at Henrietta, Okla.

Recently the company completed nineteen miles of eight-inch gas line from Bountonville to Mansfield, this state, for the Mansfield Tin Plate Co., and Mr. John T. Whitford is in charge of the plant.

In many cases, after completing lines and compressor or recovery stations the company operates them for a year or more for the owners. It also is operating several plants of its own.

In handling this extensive business over such a wide range of territory the officials and some employees of the company are required to travel extensively. President Lord, for instance, has found it necessary in the past four years, to travel in excess of 25,000 miles a year, and for the past two years his mileage has greatly exceeded that figure. In a period of fifteen months he has been five times to Wyoming, four times to Texas, five times to New York, once to Florida, besides numerous other trips. The travels of some others connected with the company have been hardly less extensive.

In the October American Magazine is a picture of Miss Mabel Young, truck driver in Wyoming, with an interesting sketch of her career. Miss Young is in the employ of the Hope Engineering and Construction Co., driving a 3½-ton truck in a country where there are few houses and fewer roads. Trips of one hundred miles a day with her truck loaded with pipe are a regular thing for Miss Young, who is frequently in the truck cab sixteen or eighteen hours a day. Miss Young hauled her full share of the pipe for the Casper line.

DEATH OF HARRY HUNTER

THE Baltimore Gas Appliance and Manufacturing Company announce the death of Mr. Harry Hunter, President of that Company and a man of whom all interests have without exception been accustomed to speak in highest terms, a man of integrity, ability, and progressiveness.

Mr. Hunter for years represented a leading gas-appliance manufacturing concern, though several years since he interested others in a project that he had in mind for the building of gas ranges in Baltimore. The project developed, and at the time of his death, Mr. Hunter was President of one of the very large and substantial gas-appliance manufacturing concerns of the country, growth due largely to Mr. Hunter's foresight and ability to meet conditions and supply a product of merit and intrinsic value.

This notice in consequence of the announcement being received while forms were on the press must be brief, but in no sense is our sorrowing diminished. We feel that we have lost a real friend in the death of Mr. Hunter.

Don't get so interested in what you're going to do tomorrow that you don't do anything today
The Visitor.

Ancient Art of "Cracking"

*Difficulties Encountered in Patenting Cracking Processes and in Protecting
Patents Issued — History of Development of Art of
Cracking is Interesting*

By FRANK A. HOWARD
(to be continued)

As used in the petroleum industry, the term "cracking" signifies generally the conversion by decomposition of a heavy or viscous oil of high boiling point into a lighter, free-flowing oil of boiling point.

Usually, the term "cracking" at the present time is universally applied to that particular species of decomposition by which gas oil or fuel oil is converted to yield a substantial percentage of gasoline.

Exactly the art of cracking goes back approximately one hundred years, at least. This, of course, not modern petroleum industry, which has not had much of life, but in the allied gas and coal distillation industries. Animal and vegetable oils, waxes, fats, and appear to have been subjected to an operation we should today call "cracking," in the very early days of the gas industry, for the purpose of converting them into illuminating and fuel gas. As early, various natural bituminous substances, such as coal, shale, lignites, and more rare mineral deposits which came very near to being solidified petroleum were subjected to destructive distillation, both for extraction and for the production of light oil distillates.

The earliest general use of this method of destructive distillation for the purpose of causing decomposition of complex bitumens into lighter oils appears to have taken place in connection with the shale and coal oil industry in England, where "cracking" processes of this kind were very early utilized to increase the yield of oil or kerosene.

Cracking for this purpose became a standard operation in the petroleum industry soon after it got on its feet commercially in America, and the process was highly valued in American refineries. By the aid of this process the supply of refined oil, which was at that time a petroleum product in greatest demand, was very much increased. In the case of many crude oils the kerosene obtained by cracking equalled the yield of natural kerosene so that in effect the kerosene production was in these instances actually doubled by cracking.

In the early years of the present century, when the demand for gasoline began to outstrip the demand for kerosene, it was natural that the oil refiner should turn

to his prior cracking processes for inspiration and help in solving the new problem. The earliest process for cracking to produce gasoline which proved successful on a large commercial scale was that developed by Dr. William M. Burton and his associates of the Standard Oil Company, Indiana. This process was a pressure distillation method, the details of which were worked out so successfully by Dr. Burton and his associates that within two or three years there were several hundred stills operating according to the method in use, not only by the Indiana Company but by a large number of licensees as well, located in all parts of the United States. The success of the process and its widespread use may be attributed not only to its intrinsic merits but also to the circumstances that its details were worked out in such a manner that it fitted into existing refinery processes and organization so perfectly, requiring the minimum of special knowledge either in construction or operation, and the minimum change in the accepted refinery practices aside from the pressure distillation itself.

The Burton process, of course, was not the only one which came forward at this time, for the subject of increased gasoline supply was one of great importance to the whole industry, and refiners, as well as chemists, engineers, and outside inventors and scientists of all descriptions, were diligently at work on other processes. The historical background of the cracking art, involving as it did not only petroleum refining but the earlier industries of gas manufacture and coal and shale distillation, gave a fertile field in which inventors seeking to improve cracking for the production of gasoline could operate. It will be remembered that the Federal Government itself became interested in this matter through the Bureau of Mines, and that much publicity was given to a process known as the Kerosene Process, the initial work on which was done under the auspices of the Bureau of Mines.

It was unfortunate as a fact that in many instances, perhaps the majority of instances, the inventors and promoters of the numerous cracking processes which began to clamor for public attention and financial backing very soon after the Burton process became generally established, neither were sustained nor with or failed to point out the historical background of the problem. It was believed by most persons not familiar with the details of the industry that cracking was an entirely new phenomenon and method, that the Burton process was the only known means of accomplishing this, and that

and before you have earned, and when you spend, don't spend all you have earned.—The Three Partners.

anyone who was able to produce gasoline by cracking in a manner different from that of the Burton patents would be assured of a fortune. The facts of the matter were quite different, i. e., cracking was not essentially new, nor was it by any means true that the Burton process was the only method by which gasoline could be obtained from heavier oils. Almost any one of the hundreds of prior cracking processes which had grown up in the three related industries of petroleum, gas, and coal, were available, sometimes without change at all and sometimes with only the very simplest changes, for the production of gasoline from heavy oils. Like every other practical proposition, it was a question of the dollars-and-cents results which was the final criterion. For one reason or another, almost none of these competitive processes could be actually used on any large scale by the average petroleum refiner with any profit to himself. Either the gasoline yield was too small, or the quality bad, or the losses too high, or the processing costs excessive, or the equipment too dangerous or too costly, or some other single disadvantage or combination of disadvantages worked to outlaw the process from the practical refinery. At least half a dozen sizable fortunes have been sunk in efforts to convince the refining interests of the country of the practical value of the more energetically promoted of these processes. Much that was of real merit was involved in many of the processes, and none of them actually gained a precarious foothold in the industry.

It was inevitable that a development of this kind, involving such a large industry, and of such great importance financially, should become the subject of a host of patents. Several hundred patents have been issued dealing with cracking processes in the last ten years. The lack of any general knowledge on the part of the public as to the nature of a patent right is in large part responsible for the confusion which has existed with respect to cracking patents and with respect to their speculative or investment value.

It should be understood that a patent is not the grant of a right by the Federal Government to practice a certain invention, make a certain machine, or use a certain process. Every person has an inherent right to engage in any lawful business, and this right is neither extended nor limited by the grant of a patent to him for an invention which he proposes to use. The right which the grant of a patent does establish is not the right to practice the patented invention, but solely the right to *prevent others from practicing the specific novel point of the invention*.

It is almost universally the case that an invention consists of a combination of something that is new with something that is old. In the art of cracking oil, the patents, without exception so far as we know, do not even purport to cover fundamentally the operation known as "cracking." They obviously could not do so, for this operation, under the same or another name, is at least one hundred years old. What the patents do cover, each of them, is some particular combination of

steps, definite fashion. Perhaps no single one of the pieces of equipment or the steps of procedure will be new in itself; perhaps the novelty will consist only in its application in that particular combination.

In other cases, the novelty may consist in the addition of some single new step or piece of equipment to an apparatus or process which was *in toto* old with the exception of that new part. For example, in the cracking art, probably two-thirds of the patents which have been issued relate to improvements in the same general method used in the Burton process, i. e., distillation of the heavy oil under pressure. These improvements take all forms; they deal with the temperatures and pressures at which the distillation takes place, the form of the equipment used, the treating of the resulting products, and every imaginable variant. The Burton patents themselves, although generally regarded as the pioneer patents in this field of gasoline production by pressure distillation, do not purport to cover the mere act of pressure distillation to produce gasoline, but are limited to this process as carried out in a particular fashion, which, in the judgment of the Patent Office, was new with Burton and his associates.

It follows from the above that almost all of the patented cracking methods, which have formed the subject of the large numbers of patents issued within the last few years, are themselves infringements of some one or more other patents, depending upon the basis upon which the inventor started to work. This fact, which is an inherent result of the nature of our patent system, has led to much misunderstanding and bitterness. Persons have invested large sums of money in the development of cracking methods only to discover what they could have found out by a five minutes' talk with a patent attorney in the first instance, i. e., that the method could not be used without securing licenses from perhaps one and perhaps a dozen earlier patentees whose separate inventions were involved in the particular method which they were endeavoring to commercialize. A situation of this kind naturally becomes the more complex in proportion to the number of patents which are co-existing in the same field at any particular time. The importance of the cracking art naturally attracted inventors to such a great extent that there is perhaps no single patent situation which is more confused than this one. The situation has been made even worse by reason of the fact that the Patent Office has been laboring under difficulties in the way of inadequate funds and an inadequate staff during the past five years, resulting not only in the grant of some patents the validity of which may be seriously questioned but also in the almost indefinite holding up of applications for patent. Since an inventor has a right to rely upon his application date as his effective date for most legal purposes, and since application for patent, according to the rules of the Patent Office, are kept secret until they issue, it follows that even though a worker or inventor has developed a method which is free of infringement of any existing patent, he must still face the risk of the issue of a patent on a long-delayed

The difference between good business and bad is sometimes the measurement of the individual or company going after it.—The Lamp.

AROUND THE BELT

New Wells, New Pipe Lines, New Contracts, Additions and Extensions. A Fund of Valuable News Gathered for the Journal Through Many Sources.

TRADE PERSONALS

Ambrose, A. W., who was formerly Supervisor of oil and gas operations on leased public lands of the Bureau of Mines, is now Assistant Director of the Bureau.

Brown, Albert, Vice-President and General Manager of the Oil Well Supply Company, California Field, located at Los Angeles, accompanied by B. E. Kline, also of Los Angeles, made a tour to the general offices and plants of the company recently, visiting the Oil Well Supply Company's plants at Oil City, Pittsburgh and Bradford, Pa., and at Parkersburg, West Va.

Clagget, E. F., of Columbus, Ohio, has been elected a Vice-President of the Ohio Gas & Oil Men's Association.

Cooper, H. C., of the Hope Natural Gas Company of Pittsburgh, and B. C. Oliphant of the Iroquois Natural Gas Company of Buffalo, N. Y., will represent the Natural Gas Association of America in the movement which the American Engineering Standards Committee has brought under way to formulate a Gas Safety Code. The movement is sponsored by the American Gas Association and the Bureau of Standards.

Fast, R. C., Field Salesman of the Oil Well Supply Company at Tampico, Mexico, has been spending a month in the States.

Hoover, H. J., of Cincinnati, Ohio, has been elected President of the Ohio Gas & Oil Men's Association, which recently held its convention in Columbus.

Jones, T. C., of Delaware, Ohio, was elected a Vice-President of the Ohio Gas & Oil Men's Association at the recent convention of that organization.

May, Hubert, of A. Beeby Thompson & Partners, Petroleum Consulting Engineers of London, Eng., is in this country enroute to an inspection of the oil fields of the southwest and California.

Thompson, Wm. H., of Columbus, Ohio, was re-elected Secretary-Treasurer of the Ohio Gas & Oil Men's Association at the annual convention of that body.

Tough, F. B., United States Supervisor of Oil and Gas Operations on Leased Public Lands, recently became Chief Petroleum Technologist of the Bureau of Mines.

DECEASED

Hunter, Harry W., President of the Baltimore Gas Appliance & Manufacturing Company, Baltimore, Md., died October 28th.

Sands, Louis C., President and General Manager of the Oil Well Supply Company, Pittsburgh, died at his home in that city November 5th.

Spettigue, George T., retired Field Superintendent of the United Natural Gas Company, Oil City, Pa., died November 6th at the age of eighty-two years.

PER CUBIC FOOT-RATES

INDIANA—*Auburn*—The Indiana Fuel & Light Company has reduced its minimum rate from \$1.25 to 75 cents per month.

KANSAS—*Topeka*—The Coffeyville Gas & Fuel Company has applied to the district court to have the order to lower its rates set aside. The company was petitioning for permission to increase its rates, when the decision was rendered that its rates should be reduced to 50 cents per thousand without a service charge.

OHIO—*Coshocton*—The Coshocton Gas Company has been granted permission to increase its rates. The new two-year rate ordinance adopted calls for a rate of \$1.50 for the first thousand, and 45 cents for additional amounts consumed.

TEXAS—*Texarkana*—The Southwestern Gas & Electric Company, it is said, is seeking permission to increase its rates. At present the company is charging 12 cents per thousand for industrial purposes, and 35 cents per thousand for domestic use, less a discount of 2 per cent.

INCORPORATED

CALIFORNIA—*Santa Paula*—The Lincoln Oil & Gas Company of Lorain, Ohio, has been incorporated here with a capital stock of \$500,000, with Harold J. Henry as local agent.

Some salesmen travel so fast trying to catch up with the fellow ahead that they never see the crowd behind.—Temco Pep.

COLORADO—Denver—The Western Oil & Gas Company, capital \$350,000, has been chartered with incorporators named as follows: J. R. Riley, W. E. Stevens and H. O. West.

WEST VIRGINIA—Charleston—The Trace Oil & Gas Company has been incorporated with a capital stock of \$50,000. Those named as incorporators are: E. C. Stanton, L. M. Stanton, J. V. Reishman, A. M. Reishman and W. J. Reishman, all of this city.

Fairmont—The Clayco Gas Company has been incorporated with a capital of \$50,000 by Charles Powell, Kemble White, J. F. Hare, E. R. Powell and G. Rinehart, all of Fairmont.

Huntington—The Central States Oil & Gas Company has been formed with a capital of \$100,000. Those named in the charter as incorporators are: W. P. Floyd, L. C. Davidson, J. C. Sublett, H. C. Worth, all of Huntington, and H. B. Stambaugh of Paintsville.

Morgantown—The Davenport Oil & Gas Company has been organized with a capital stock of \$50,000. Those named as incorporators are: Charles F. Davenport, Richard E. Davis, Stephen Davis, F. C. Loudenslager, J. R. Blackburn, Morgantown.

Walkerville—A charter has been issued to the Waggoner-Hoyt Oil & Gas Company of this city. Those named as incorporators are: Alvon Waggoner, Carrie L. Waggoner, Burnsville; William E. Hoyt, Viola M. Hoyt, Walkersville; Frank Nay, Roanoke, W. Va.

TEXAS—Texarkana—The Southwestern Gas & Electric Company, incorporated under the laws of the State of Delaware with a capital stock of \$5,500,000, has obtained a permit to conduct business in the State of Texas. W. L. Wood, Jr., has been made agent for the company in Texas.

GENERAL

ARKANSAS—Smackover Field—No. 1 drilled by E. M. Jones on the Laney lease, is reported making a large quantity of oil and also around 20,000,000 cubic feet of gas.

COLORADO—Denver—At the recent meeting of stockholders of the Empire Gas & Fuel Company in this city, the following executive committee was elected: Henry L. Doherty, Chairman; W. A. Jones, Warren W. Foster, Louis F. Musil, Milan R. Bump, H. L. Stuart, Waddill Catchings, Casmir L. Stralen and Herbert Lehman. The new board is: Henry L. Doherty, Chairman; H. R. Straight, H. O. Caster, Ray C. Russum, H. L. Stuart, Waddill Catchings, Casmir L. Stralen, Herbert Lehman, Milan R. Bump, Warren W. Foster, Harry D. Frueauff, W. A. Jones, Louis F. Musil, John M. McMillin and W. A. Sinsheimer.

Mitchell County—The Mitchell County Oil Corporation, it is reported, has drilled in its No. 1 well on the Badgett lease which has a production estimated at 40,000,000 cubic feet of non-inflammable gas.

KENTUCKY—Powell County—It is reported that the Thirteen Oil & Gas Company has completed a 1,000,000-cubic foot gasser on its holdings in this county.

LOUISIANA—Bossier Parish—The Standard Oil Company on the Moory lease, section 28-19-11, Bellevue district, drilling a deep test for oil, completed a 10,000,000-cubic foot gas well. The well was completed at 2,622 feet.

Monroe—It is claimed that excessive use of natural gas in the manufacture of carbon black by numerous companies in this district will result in natural gas shortage in the near future, depriving citizens of the convenience of gas service. It is said that 855,000,000 cubic feet of gas per week is consumed by the carbon black industry in the Monroe field.

The Windsor Oil & Gas Company has completed a small gasser on the Pipes lease, section 19-20-6, at a depth of 2,305 feet. This well extends the Monroe field three miles east.

Webster Parish—Five miles southwest of production, the Ohio Oil Company has completed No. 1 Sexton, making 5,000,000 cubic feet of gas from five feet of broken sand at 2,670 feet, section 31-23-9.

MISSOURI—Jefferson County—The Glaize Creek Oil & Gas Pool Syndicate has leased 7,000 acres in this country, 25 miles south of St. Louis, and will shortly begin development work in several locations.

OHIO—Bellaire—The West Virginia Natural Gas Company has drilled in a good producing gas well on the Shield farm.

Holmes County—In Hardy township, the East Ohio Gas Company drilled a test on the Weldon Uhl farm to the Clinton sand. It is a good gasser in the Clinton sand.

Marietta—A fair gasser has been completed on the Farrell lease by W. A. Clark. The production will be utilized for domestic purposes.

Newark—In order to save tearing up paving in the future, on account of trouble with gas mains, the Newark Gas & Fuel Company is removing its mains from the middle of the street, and laying a line down each side of the street instead. In the past both sides of the street were served from the one pipe placed in the middle of the street.

Veto—The Veto Oil & Gas Company has completed a fair gasser on the G. C. Drain farm near Veto. The well was drilled into the Keener sand, where production was found.

Washington County—H. S. Little, heading an organization of employes in Parkersburg, W. Va., reports that a good gasser has been completed on their lease about 18 miles from Belpre. The lease, which covers 160 acres, will be further developed.

Nothing is impossible to the advertiser with a good product, sound judgment and an indomitable will.—The Three Circles

Woodsfield—The Central Gas Company has completed a good gasser in its test on the Jacob Cecil tract. The gas will be utilized in Woodsfield.

OKLAHOMA—Bartlesville—The Empire Gas & Fuel Company reports net earnings for the nine months ending August 31, 1922, available for bond interest and reserves of \$8,327,587. Based on current earnings, net for the year ending November 30, 1922, will be approximately \$10,500,000.

A gas line from a field fifteen miles distant has been completed and insures the city of an additional daily supply of 20,000,000 cubic feet. The new line is the property of the Smelter Gas Company.

Carter County—The Magnolia Petroleum Company in No. 5 on the Hefner lease, section 27-2s-3w, Fox District, has completed a larger gasser from sand at 2,355-58 feet.

Creek County—The Jomac Oil Company has completed No. 2 on the Cain lease, section 10-16-9, in sand at 2,985-3,002 feet, and reports production of 10,000,000 cubic feet of gas as well as about 120 barrels of oil.

The Prairie Oil & Gas Company got 6,000,000 feet of gas from the Glenn sand at 2,615 feet in No. 1 Henry, section 32-16-9, but has mudded it off and is drilling deeper.

The Waite Phillips Company shut in 5,000,000 feet of gas from 857-869 feet in No. 5 Brown, section 24-16-10.

Grady County—The Carter Oil Company's No. 1 Chandler, section 26-5-8w, at 1,228-1,312 feet, is good for 15,000,000 feet of gas.

Kay County—The Ballentine interests have a 6,000,000-cubic foot gasser from sand at 758-62 in No. 1 on the Wildegrube lease, section 28-27-1e.

The Blackwell Oil & Gas Company has 2,000,000 feet of gas in No. 1 Magette, section 13-26-1w, from the shallow sand at 697-710 feet.

The Alcorn Oil Company has 12,000,000 feet of gas from the shallow sand at 790-95 feet in No. 1-A Endicott, section 35-25-1w.

The Comar Oil Company has 1,500,000 feet of gas from 825-30 feet in No. 3 Blubaugh, section 2-24-1w.

Okfuskee County—In the Lyons Pool, the Turman Oil Company has a gasser in No. 10 Barnett, section 24-11-11, sand at 2,800-2,810 feet.

North of oil production in the Midwest Pool, W. R. Page has been unsuccessful up to the present in mudding off the big gas in No. 1 Wind, section 36-11-9. This well was credited with 50,000,000 feet of gas from sand at 2,904-2,970 feet, which was mudded off but the mud blew out. It will be mudded again.

The Texolean Oil Company in No. 1 on the Wind tract is reported good for 10,000,000 cubic feet at 2,156-75 feet. This location is in section 36-11-9.

The Atlantic Oil Producing Company has completed a 4,000,000-cubic foot gasser in No. 1 on the Barnett tract, section 34-11-11, reaching the sand at 3,042-47 feet.

Oklahoma City—The Oklahoma Gas & Electric Company reports gross earnings of \$5,587,488 for twelve months ended July 31st, 1922. Net after taxes was \$1,405,470, and balance after charges \$568,027.

Okmulgee County—The Leonard Petroleum Company in No. 1 on the Grant lease, section 19-16-13, is reported good for 60,000,000 cubic feet at a depth of 1,460-75 feet.

Osage County—The Oklahoma Natural Gas Company found 13,000,000 feet of gas in the Burgess sand at 1,613-23 feet in No. 611, section 28-20-12.

J. E. McKinney reports 9,000,000 cubic feet of gas at a depth of 1,743 feet in the Bartlesville sand. The production has been taken over by the Oklahoma Natural Gas Company.

Tulsa County—The Western National Gas Company has completed a well having a production of 12,000,000 cubic feet at 2,135-80 feet.

An 8,000,000-foot gasser has been completed by West and associates in No. 2 on the Tiger lease, section 12-18-12.

Wann—The plant of the Georgia Oil & Gas Company has been taken over by the city and will in future be operated on municipal account.

PENNSYLVANIA—Allegheny County—Charles F. Wachter's test on the Robert Greese farm is a light gasser in the fourth sand.

Greene County—Two miles west of Ninevah, Morris township, the West Virginia Natural Gas Company has drilled a test on the Lewis Power into the Ninevah 30-foot sand. A gas pressure estimated at 2,000,000 cubic feet was developed in this formation.

In Morris township, the Carnegie Natural Gas Company's test on the Enoch French farm is a gasser in the Gordon sand.

In Springhill township, the Marshall Oil & Gas Company's test on the Thomas Clark farm is a gasser in the Big Injun sand.

In Richill township, the Fort Ryerson Oil & Gas Company has completed a test on the Norman Lyons farm. It is a gasser in the Pittsburgh coal at 357 feet.

In Morris township, the Natural Gas Company of West Virginia has a gasser in the Gordon sand at a test on the Lewis Powers lease.

In the same township, the Carnegie Natural Gas Company's test on the J. E. Lough lease is a gasser in the Big Injun sand.

In Washington township, Myers, Long & Company's test on the Lee R. Shoup lease is dry in all sands.

Harlansburg—The S. E. Turner Oil & Gas Company has completed a 1,000,000-cubic foot gasser on the C. H. Turner farm near this place. The well is located in the extension of the North Liberty field, which takes in parts of Lawrence, Butler and Mercer counties.

Tidioute—The Clinger Oil & Gas Company has completed a gasser said to be good for 2,500,000 cubic feet

The winding path may possess more beauty, but the straight road speeds arrival.—Vision.

gas per day in the Queen sand pool. This well is about 600 feet from the first well drilled in by these same interests on the Wheelock farm.

Washington County. In Canton township, Hughes & Co. have completed a light gasser in the fourth sand at a test on the Edward Malone farm.

The Manufacturers Light & Heat Company has a gasser in the Pleasant Grove District, on the A. & D. J. England farm.

In the Imperial District, the Valley Oil & Gas Company's test on the Rosetta Kelly farm is reported a gasser in the fourth sand.

Waynesburg. The Caseman Oil & Gas Company in its test on the Caseman farm, Springhill township, reports a gasser having a yield of around 300,000 cubic feet.

Westmoreland County. The Peoples Natural Gas Company, which two years and a half ago drilled in the deepest producing well in the world, near Ligomer, being 1,996 in the Booth & Elmer lease, have been drilling for two years developing a second deep test in the same place on the Seger Brothers lease. This well is now 2,823 feet. A third well is also in progress, being 2,750 feet at this time, and this is No. 1842 on the Booth & Elmer tract.

WEST VIRGINIA. *Bearton County.* The West Virginia Central Gas Company reports a production of 570,000 cubic feet of gas from well No. 3, on the Henry Young farm, Otter district.

It is reported that a well of 7,000,000 cubic feet capacity has been completed on the Gerwig farm on the east fork of Steer Creek, Otter district.

No. 1 on the D. S. and C. F. Engle farm in Otter district is reported as producing at the rate of 5,000,000 cubic feet of gas daily. This well was drilled by the West Virginia Central Gas Company.

Wetzel County. An estimated production of 300,000 cubic feet of gas is reported by G. L. Calver from the George Bell No. 2 well on Sheridan district, which was 2,145 feet deep.

A production of 540,000 cubic feet of gas daily is estimated from the newly completed well No. 1 of the Falling Creek Oil & Gas Company on the P. W. Collier farm in Sheridan district.

Woodbury County. In McClelland district, Trautner & Co. have a garden gasser at a test on the Stewart heirs' farm. Drilling has been suspended to move back the fence.

Worcester County. A production of 216,000 cubic feet of gas is reported from well No. 6171 of the Hope Natural Gas Company on the J. E. Reaser farm in DeKalb district.

The Laurel Creek Oil Company's test on the F. W. Bell farm in DeKalb district has been completed to the lower sand and is showing for a 750,000 foot gasser.

The Hope Natural Gas Company has completed the C. A. Cooper well No. 208 in DeKalb district. The well is producing at a rate of 281,568 cubic feet of gas.

Harrisonville. At Cox's Mills, Harrisonville has completed a well which is said to be good for 11,000,000 cubic feet.

Monaca County. J. B. Weir has completed a gasser in the Weir sand at the No. 93 well on the tract of the Falling Rock Cannel Coal Company in Big Sandy district.

The Kanawha City Oil & Gas Company completed the No. 1 well on the tract of the Campbell's Creek Coal Company at a depth of 1,864 feet. The daily production is estimated to be about 500,000 cubic feet of gas. The well is in London district.

The United Fuel Gas Company reports an average daily production of about 1,200,000 cubic feet of gas from the H. C. Dickinson well No. 1214 in Cabin Creek district, which was drilled 2,027 feet.

In Big Sandy district, the Peerless Carbon Black Company's No. 8 on the Osborne Brothers' farm is a light gasser in the Weir sand. It is also showing a little oil. In the same district, the United Fuel Gas Company's test on the L. V. Knotts farm is good for 1,000,000 feet of gas in the same formation.

Lincoln County. E. S. Paulmore and others report a production of 200,000 cubic feet of gas from the Marshall Johnson No. 1 well in Carroll district, which was drilled 2,100 feet.

It is reported that No. 1 on the Caldwell lease, Laurel Hill district, drilled by the Huntington Development Gas Company, has a production of 200,000 cubic feet.

Newton. The Elkins Oil & Gas Company has completed a good gasser in the D. E. Lawney farm, near this place.

Parkersburg. Officers and superintendents of the South Penn Oil Company met with the representatives of the employees on the occasion of the recent annual meeting of the Welfare Department of the company. Among those present were the following: President, E. W. Young; Vice President and General Manager, E. E. Crocker, Pittsburgh; Treasurer, S. G. Hartman, Pittsburgh; Superintendent, J. A. Curry; E. J. Huffman, head of the Welfare Department, of Pittsburgh; General Superintendent, E. B. Turner, Mannington; Division Superintendent, George Ward, Charleston; Division Superintendent, J. J. Hays, Mannington; Division Superintendent, W. C. Spence, Parkersburg; D. J. O'Neil, superintendent, Lawrence Division, Parkersburg; and delegates representing the employees.

Pennsylvania. In the Hope Natural No. 4 well in Pottsville district, a production of 460,000 cubic feet of gas daily is reported by the Hope Natural Oil & Gas Company.

Pittsburgh County. In the Hope Natural No. 4 well in Pottsville district, a production of 460,000 cubic feet of gas daily is reported by the Hope Natural Oil & Gas Company.

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The successful man lengthens his stride when he discovers that the signpost has deceived him.—The Lamp.

In Union district, the South Penn Oil Company has a Big Injun sand gasser at their No. 1 well on the Minnie Sommerville farm.

In the same district and county, the Carnegie Natural Gas Company's No. 2 well on the Charles Ward farm has been completed in the Big Injun sand and is a gasser.

In Union district, Haught and Woodford have a Big Injun sand gasser at their No. 1 on the Harvey Summer-ville farm.

Roane County—Godfrey L. Cabot reports the completion of well No. 1 on the farm of the D. M. Ferrell heirs in Smithfield district, which a test showed could produce a daily rate of 160,000 cubic feet of gas before shot.

The United Fuel Gas Company reports the completion of well No. 1215 on the Sunday Creek Coal Company tract in Cabin Creek district, which produces at a daily rate of 260,928 cubic feet.

The United Fuel Gas Company, after drilling 1,972 feet in well No. 1271 on the C. W. and C. C. Carper farm in Geary district, reports a production of 7,000,000 cubic feet of gas.

Wetzel County—On Knob creek, Center district, the Manufacturers Light & Heat Company's test on the Jennings Furbee farm is a gasser in the Big Injun.

TEXAS—*Brady*—Fourteen miles north of this city, on the W. Z. Stapleton farm, a large gasser was recently completed. Following the successful drilling in this location, leases on 600 acres have been taken by O. L. Billingsley, and further development work will be undertaken.

Carson County—Stone and associates report a good volume in No. 1 on the McConnell lease at 2,460 feet. The well is being drilled deeper.

Clay County—The Lone Star Gas Company in No. 1 on the Miller tract reports a gasser good for around 16,000,000 cubic feet at a depth of 1,380 feet.

Corpus Christi—The Corpus Christi Gas Company has increased its capital stock from \$350,000 to \$550,000, the financing having been accomplished through the purchasing of the property of the Corpus Christi Gas Company of Texas by the Corpus Christi Gas Company of Arizona.

Eastland County—May & Clayton Drilling Company in their No. 1 on the Higginbotham lease have 3,000,000 cubic feet of gas at a depth of 3,380 feet.

Grady County—The Little Nick Oil Company, south of Chickasha, completed a gasser of 15,000,000 cubic feet capacity, in No. 1 on the Farrell property, section 26-5n-8w. Production is from sand at 1,322 feet.

Stephens County—The Texas Company's No. 17 on the Black Brothers tract is reported good for 10,000,000 cubic feet at 3,290 feet.

In the Duncan district, Wadman and associates in their No. 2 on the Brown lease, section 23-1n-9w, completed a larger gasser at 2,000-2,010 feet.

Young County—No. 3 drilled by Nash & Wildforb on the Nash tract, came in at 2,570 feet with 6,000,000 cubic feet of gas and 175 barrels, according to report.

ALBERTA—*Medicine Hat*—According to report, an offer has been made by the Canadian Western Power & Fuel Company to sell all its rights in the Redcliff field to this city for a consideration of \$262,000.

Vauxhall—It is reported that natural gas has been developed in a test drilled near here. Gas was found at a depth of 840 feet.

CARBON BLACK SUPERIOR TO LAMPBLACK

LAMPBLACK has been used as a pigment for printer's ink ever since the invention of the printing press, and until 1864 it was used almost exclusively. For printing requiring an extremely fine-grained ink great trouble was taken to purify the black. After the advent of carbon black in 1864, and its diminished cost after 1880, lampblack was less and less used in printer's ink; only a little is used at the present time, and that only to impart certain qualities to an ink already containing carbon black.

Carbon black is peculiarly suited to the needs of present methods of printing, the fast-running presses and half-tone illustrations. Certain carbon blacks give a short ink; that is, an ink of buttery consistency which does not flow rapidly. This is especially desirable in lithographic and offset work, in slow-speed presses, and for most half-tones. Lampblack does not give the right consistency and is too gray. Certain other carbon blacks are used because for fast-running presses they make a fluid long ink which has opacity enough to give a black letter. Ink manufacturers and users believe that carbon black is absolutely essential to their business.

Prior to 1914 carbon black was used by the rubber industry in small amounts for coloring. Little distinction was made between carbon black and lampblack, the two compounds being used indiscriminately. At the present time, partly on account of the stimulus afforded by the rising price of zinc oxide, carbon black is used in large amounts as a filler for rubber, with a correspondingly decreased amount of zinc oxide. Many rubber men claim unusual properties for rubber so compounded. Carbon black is used in rubber in quantities of 3 per cent. to 20 per cent. by weight, and is said to increase the tensile strength greatly and to give increased toughness and resistance to abrasion. Some authorities believe that the life of the rubber and its capacity to carry loads are increased. Other rubber chemists are more conservative and do not

Don't try to be clever—the competition is too keen; there's more money in plain industry.—*Factor News.*

air that carbon black possesses any properties that make it irreplaceable.

Theoretically carbon black should be an ideal filler for rubber, owing to its extremely fine state of division and to the correspondingly large surface energy developed by mixing with the gum rubber. It also serves to protect the rubber substance from the effects of light and it may retard oxidation. Whatever the exact facts may be as to the irreplaceability of carbon black in rubber, a large amount is now consumed by the rubber companies for automobile tires and other articles, probably 20,000,000 pounds annually besides 10,000,000 pounds exported in normal years.

The above data is taken from a bulletin issued by the Bureau of Mines.

CIVIL SERVICE EXAMINATION

THE United States Civil Service Commission announces an open competitive examination for petroleum economist (oil and gas production). A vacancy in the Bureau of Mines, Department of the Interior, headquarters at Pittsburgh, Pa., for duty on petroleum work, and vacancies in positions requiring similar qualifications, at \$1,500 to \$2,100

a year (plus "bonns," or higher or lower salaries, will be filled from this examination, unless it is found in the interest of the service to fill any vacancy by reinstatement, transfer or promotion.

Full information may be secured by addressing the Bureau of Mines.

UTILITIES LEAD RECENT FINANCING

PUBLIC utility companies led in new corporate financing for the month of October. Out of a grand total of \$184,427,500 of new bonds, notes and stock, utility issues amounted to \$93,172,500, while railroad financing amounted to \$17,250,000 and industrial \$57,320,000. The utility issues included \$82,717,000 bonds and \$5,455,500 of stock. The only utility note issue of the month was the \$5,000,000 Western States Gas and Electric Company Fifteen-Year Gold Notes, 6%, Series "A," due October 1, 1937, which were brought out by a syndicate including H. M. Byllesby and Company, Blyth, Witter and Company and Cyrus Peirce and Company at a price of 96 and interest, yielding the investor about 6.40 per cent. This issue was quickly oversubscribed.



Absorption Gasoline Plant Built by Us on Lease of the Atlantic Oil Producing Company, Near Breckenridge, Texas

ECONOMICAL GASOLINE RECOVERY

As pioneers in the absorption process of Gasoline Recovery, we are employed by leading natural gas and oil interests in all fields to install and equip absorption plants.

We are equally at home in the engineering, construction and equipment of compression plants for gasoline recovery.

We build economical and efficient plants for recovery of gasoline from natural gas, whether rich or lean in gasoline content.

Our Activities also embrace:

1. Gas and Oil Pipe Line Construction.
2. Erection and equipment of Oil pumping and Gas Compressing Stations.
3. Equipment of our own manufacture of proven efficiency, including Absorbers, Heat Exchangers, Compressors and Cooling Apparatus.

We go anywhere in the world, and are glad to figure on any consulting or construction engineering work, whether large or small.

HOPE ENGINEERING & SUPPLY CO.
CONSULTING AND CONSTRUCTION ENGINEERS

MT. VERNON, OHIO, U. S. A.
BRANCHES: TULSA, OKLA. - PITTSBURGH, PA.

A DUO-SERVICE

For the

All - Gas Company

(STRAIGHT GAS)

AN ALL - GAS RANGE

OF HIGH TYPE

Design Materials Workmanship

For the

Gas and Electric Company

A COMBINATION

GAS and ELECTRIC RANGE

Gas Cooking-Top

Electric-Oven



SPECIAL COMBINATION TYPE

These ranges are not designed to be competitors, but each to cover a specific field - namely, a Straight-Gas-Range for cities served by a Straight-Gas Company, and a Combination Gas-and-Electric Range where desired, in cities served by combination Gas-and-Electric Company.

WAS SHOWN AT THE "A. G. A." CONVENTION

This company has for years stood among the foremost makers of Cooking Ranges and Stoves, they have now turned their experience to account in lines of interest to the Straight-Gas and the Gas-and-Electric interests

MAGEE FURNACE CO.

BOSTON,

UNION STREET

MASS.

Guaranteed

DISK PREVENTS CAVE-INS DROPPING DOWN WELL HOLE

R. B. Barnes, United Natural Gas Co., Brookville, Pa.

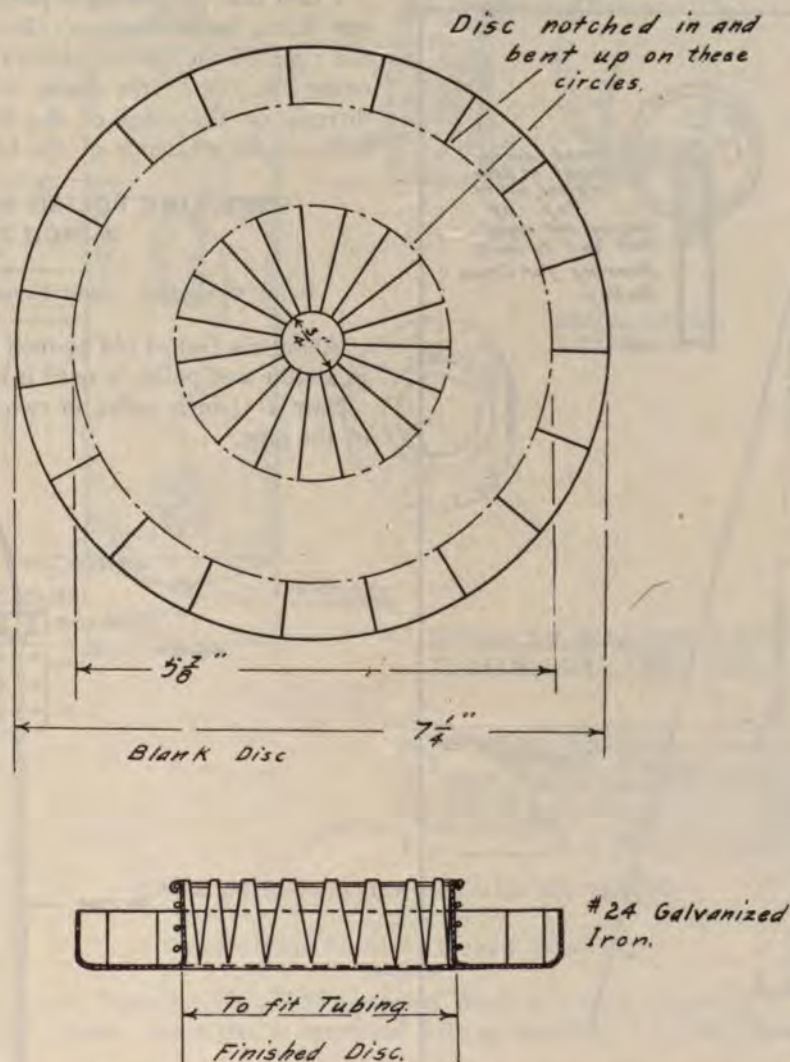
The purpose of this disk is to prevent cave-ins from dropping down and covering the producing sand. It is not intended to prevent water from going to the bottom of the hole, but simply to hold up the cavings, and can

CARE OF STOP COCKS ON WELLS AND LINES

Mr. G. A. Kennemuth, United Natural Gas Co., Shippensburg, Pa.

It is my opinion that the majority of stop cocks that are found broken on wells and lines have become so on account of not having been properly oiled.

This is especially true in cases where stop cocks are installed on high pressure wells and lines and where it



DISK TO PREVENT DROPPINGS FALLING DOWN WELL HOLE

be used on any size tubing, particularly where a hook wall or disk packer is set a considerable distance above the producing sands, as frequently the wall caves below the packer and, as before stated, will fill up the pocket and cover the sands.

When a hook wall or disk wall packer is used, the ordinary bottom is tapped out or a special bottom is put on, and a string of pipe suspended to the necessary depth.

This may be of any old pipe or tubing, just so it has sufficient tensile strength to carry its own weight, and then one of these disks is put on about every fourth or fifth joint.

Care should be used to see that the bottom joint is belled out so that the bailer will not become caught in pulling out.

is necessary to tighten the nut on the core of the stop cock to make it hold.

When a stop cock has been closed for some time, and which was not properly oiled when installed, it is almost impossible to open it without hammering it, with the result that the stop cock is often broken.

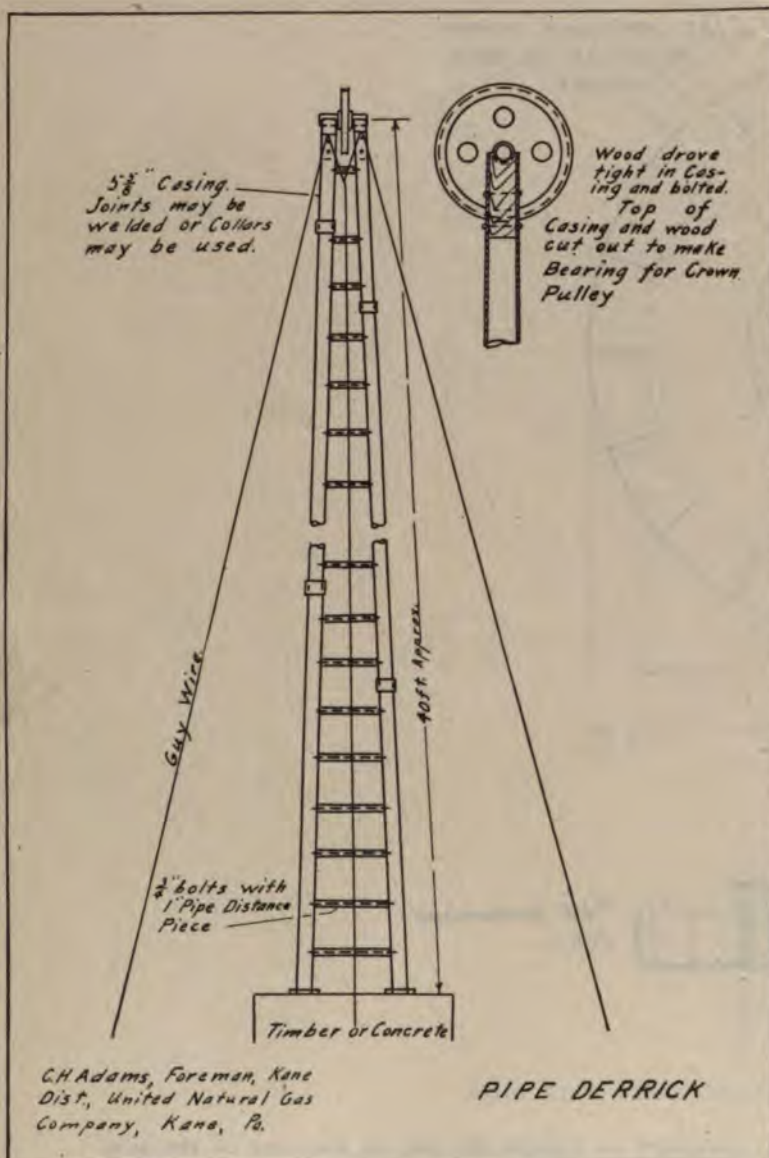
This trouble can be eliminated by oiling all stop cocks about every six months. I would recommend that Mica axle grease or Arctic cup grease be used.

To prevent a great loss of gas owing to lines breaking, it is advisable to install a check valve on every gathering line, where it leaves a main line or crosses a river or creek, as I recall several instances where gathering lines have been broken by falling trees, and by the use of a check valve we have saved our company considerable expense in not having to drain the main line.

PIPE POLE DERRICK

C. H. Adams, United Natural Gas Co., Kane, Pa.

This derrick can be made of either 5½ or 6¼-inch second-hand casings. We usually make them about 40 feet high (about two joints and a half of pipe being used).



The top ends of the pipe are brought within about 4 inches, with sufficient opening to permit an old crown pulley to fit between the two uprights.

In the top end of each upright is driven a wooden plug about two feet long. These plugs are bolted firmly in position with two bolts thru each leg. The top of each leg, or upright, and the wooden block is cut out to form the bearing for the crown pulley.

The bottom of the two uprights are separated from 30 to 36 inches. A 7/8-inch hole is drilled thru each leg about every 18 inches, thru which is put a ¾-inch bolt, and between each leg is a 1-inch pipe distance piece of suitable length. These act as a stiffener and a ladder. The derrick is thoroughly guyed.

Ideas often flash across our minds more complete than we could make them after much labor.

This derrick may be set on a concrete foundation on timbers, whichever is most convenient. We often use an old bull wheel or sand reel gudgeon for a bearing for the legs.

CONSERVING GAS IN DRILLING BOILERS

M. G. Oakley, United Natural Gas Co., Clermont, Pa.

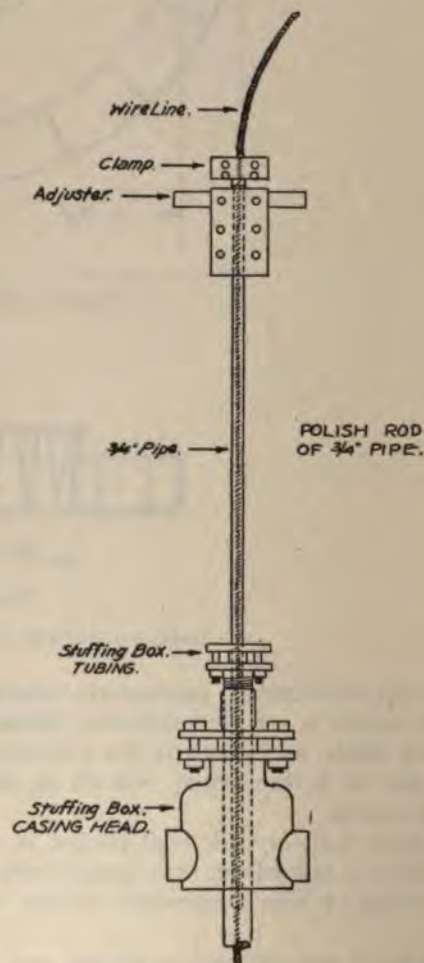
I find that by placing a piece of sheet iron on top of our Klein boiler burners, allowing it to protrude the edge of the burner about 6 or 8 inches, that it causes the tip of the flame to strike lower and more directly on the sides of the fire box, and will greatly increase the efficiency of the burner.

WIRE LINE POLISH ROD MADE FROM ¾-INCH PIPE

M. A. Birmingham, United Natural Gas Co., Clermont, Pa.

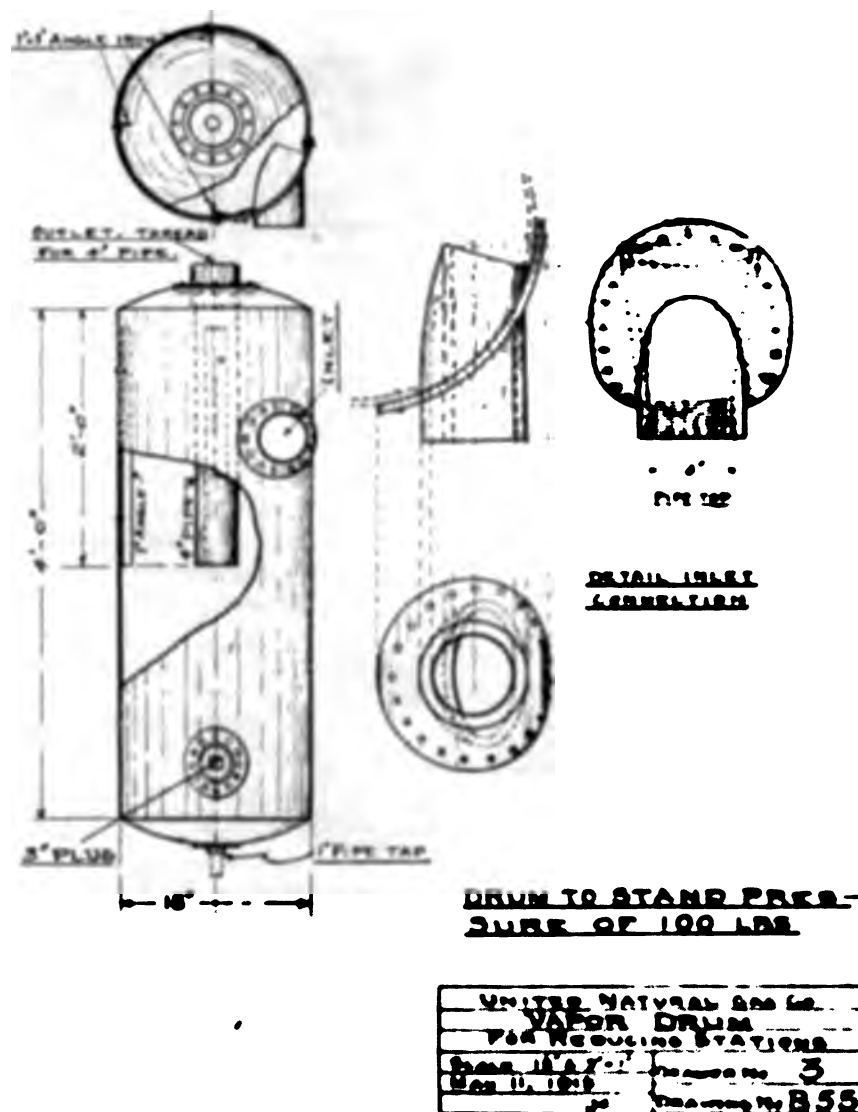
About six feet of old ¾-inch pipe is used, placing same in a lathe and polish it until it is smooth.

Saw a ¾-inch collar in two and attach it to one end of the pipe.



This pipe will be 1½-inch O. D. and will fit in the polish rod adjuster for Klein pumping powers. It is then necessary to use above the ¾-inch half collar another clamp to hold the wire line as shown in the sketch.

You can then use the regular 1½-inch polish rod stuffing box on your tubing.



TANK FOR CATCHING FLUID OR VAPOR

Formen, United Natural Gas Company, Inc. City, Pa.

Drawing No. B-55 shows a fluid or vapor catching tank, where gas is saturated with moisture of any kind

BLOWING WATER FROM WELL

Formen, United Natural Gas Company, Inc. City, Pa.

It is very good success, as long as the rock pressure is 350 pounds, or over, in running 1/4 or 1 inch pipe to the bottom of the well, perforating the bottom and hanging the pipe in a stuffing box on well and setting the 1/4 or 1 inch pipe in ahead of the stop at the well, and then blow the well into a a cooler joint and no gas will be wasted can be done when the line pressure does not 100 pounds, but if higher the rock pressure, or the line pressure can be putting the control stop, and when the pressure is high enough it will blow out thru the 1/4 or 1 pipe and water can then be blown from the drip waste of gas

GAS MASKS FOR GASOLINE PLANTS

Formen, United Natural Gas Company, Inc. City, Pa.

The type of gas mask that consists merely of a face piece and a breathing tube, long enough to reach from the wearer to a source of pure air, is valuable around natural gas gasoline plants, especially in examining the unloading valves of tank cars used for gasoline shipments

Regulation army gas masks can be adapted for this purpose at very small cost. It is merely necessary to disconnect the rubber tube and canister from the face piece and attach a piece of hose of the desired length incorporating the valve at the bottom of the canister, or a similar valve, in the connection between the hose and the face piece to prevent breathing out through the hose

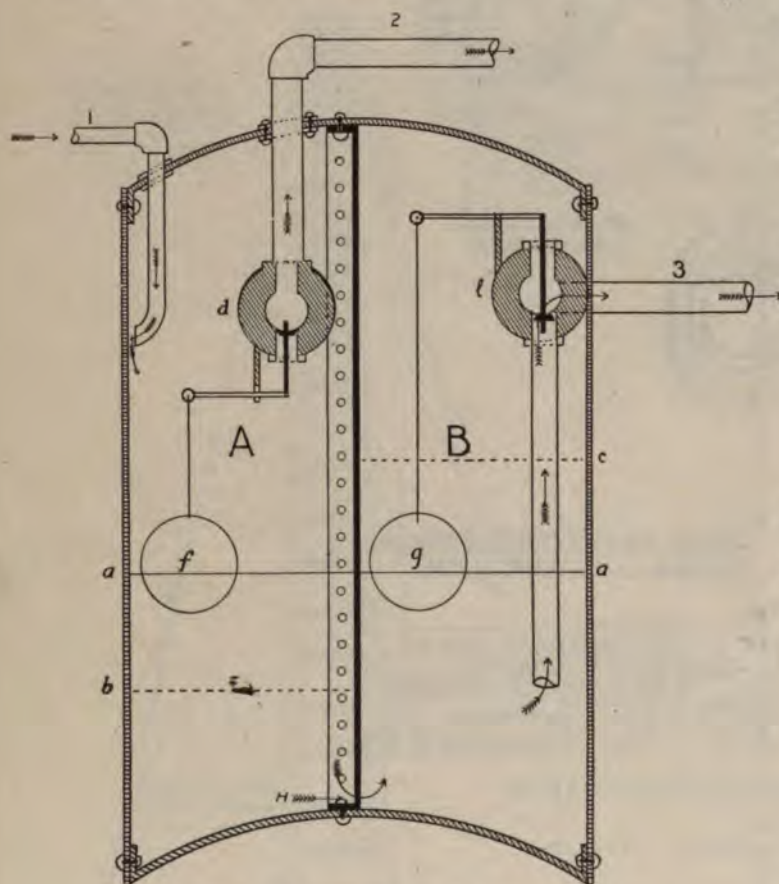
Improvement is nature. Hunt.

TRAP FOR SAVING GAS AT OIL WELL

R. O. Wagstaff, The Ohio Fuel Supply Co., Sugar Grove, Ohio

The rough sketch shows a trap for saving gas at an oil well. I believe it will convey my idea and its advantages over the ordinary trap.

No. 1 shows the inflow of oil and gas, No. 2 the outflow of gas, No. 3 the outflow of oil. (a) Shows the oil level at which the floats (f) and (g) are adjusted,



TRAP FOR SAVING GAS AT OIL WELL

(b) is the level at which the oil can go with float (f) following, after the gas pressure has accumulated to the extent that the oil is forced down to (b) and raised to the level of (c), valve (d) will open and allow gas to flow out in line. Also valve (e) will open and allow oil to flow out in line 3, (h) is the opening at bottom of partition. The oil in both halves of the trap acts as a seal. If the pressure accumulates in "A," it will force valve open at (d) and will also force oil level down in "A," thus forcing the oil level up in "B," causing the oil to flow from No. 3, there being a slight pressure above the oil level in "B" caused by the rise in the level of the oil. The difficulty of most traps is to keep the seal. This trap will maintain its seal under all conditions, whereas other traps will not. A considerable quantity of gas is now being wasted, because of the inefficiency of the traps, and the casing-head gas is always rich in gasoline.

He only confers favors generously who appears, when they are once conferred, to remember them no more. Johnson.

BAILING OR AGITATING WELLS

Mr. C. A. Mulkin, United Natural Gas Co., Stoneboro, Pa.

As it is difficult to get a bailer of any size down a string of 2-inch tubing, we have made use of a piece of 1½-inch O. D. heavy rubber hose about twenty or twenty-five feet long. For a dart, we use a standing valve for a 2-inch working barrel, tapping the ball and screwing in a ¼-inch bolt.

For a bail, we use a wire line rope socket, with a perforated nipple screwed into the hose connection, and a pin welded into the nipple.

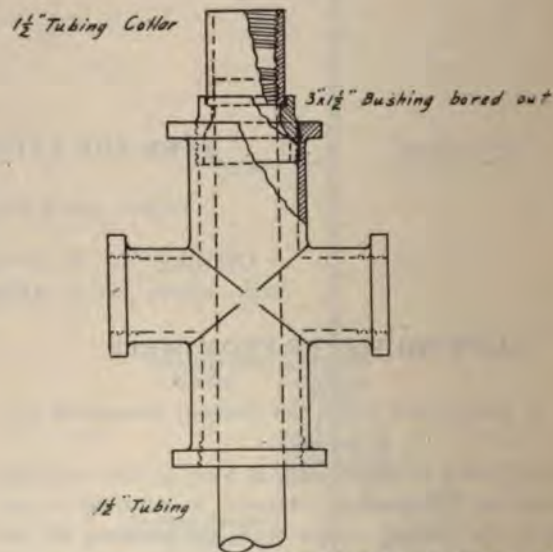
The hose will not hold much fluid, but after it has been run a few times, or if the well is making any gas at all, three or four buckets of fluid will follow the bailer out of the well each time that it is run.

The rubber hose will last for an indefinite period and will go down the tubing even if there are some crooked joints in the well.

CROSS TEE CASING HEAD

W. A. Hovis, United Natural Gas Co., Clermont, Pa.

The material that will be required to use a 3 x 2 inch cross tee in place of a 3 x 3½ inch is a 3 x 3½ inch cast iron bushing (heavy) and a 1½-inch collar. Turn the bushing out so that 1½-inch pipe will slide thru, and



CROSS TEE CASING HEAD

turn a true seat about ¼-inch wide on top of the bushing. Then turn and face off true a 1½-inch collar that will just nicely fit in the seat in the bushing.

For a gasket, a ring made of ⅛-inch or 1-16-inch Rainbow gasket material should be used, and the ring slipped over the last joint of 1½-inch tubing, and you will have as good a job as if you had made use of a regular casing head.

TOBEY DIAPHRAGM TESTING TOOL

as Lett, United Natural Gas Co., Titusville, Pa. and
McDonald, United Natural Gas Co., Bradford, Pa.

efficient tool for rapid and open examination
new or old No. 1 Tobey diaphragms is shown

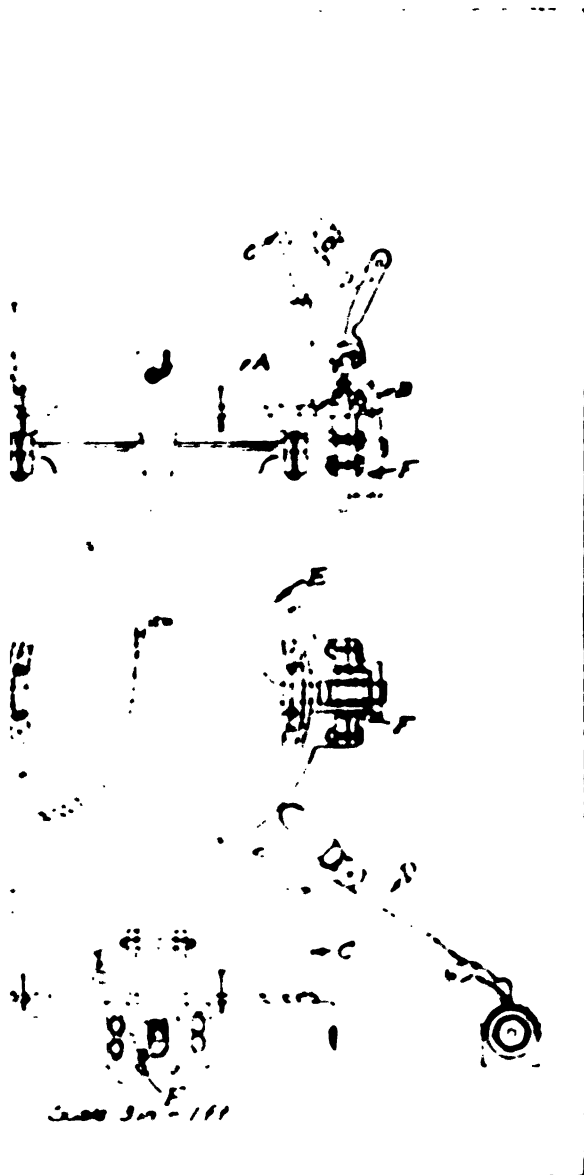


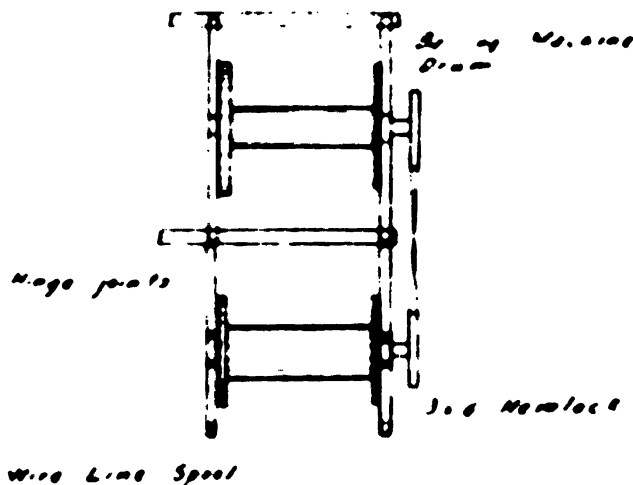
FIG. 1. TOBEY DIAPHRAGM TESTING TOOL

is placed over testing plate A, which is made
of flattened diaphragm. Collar C is then
positioned and hooked at dog B. Pull
rod and collar C is forced down on diaphragm
with rubber ring D by eccentric on shaft
is then turned through hose connection
bracket at the end of rod.
Is of diaphragms have been recovered and put
through the use of this tool. It is becoming
it to wear the diaphragm leather, and this plan
maintain and prevent supply.

ATTACHMENT FOR REELING WIRE PUMPING LINES

M. A. Birmingham, United Natural Gas Co., Bradford, Pa.

To make attachment for reeling wire pumping lines
from pulling and hauling machines, an extension frame
is made from 3" x 6" hemlock plank with legs to support
the outer ends. The other ends are attached with a
hinged joint to the frame of the hauling machine.



ATTACHMENT FOR REELING WIRE PUMPING LINES

The spool is revolved with a belt from the drum shaft
and it is possible to quickly remove a wire line from the
machine after pulling same from the well to allow the
use of the tubing line on the drum. The pumping line is
later respoiled on the drum for returning to the well.

CARE OF WATER COOLED ENGINES

Paul Beck, United Natural Gas Co., Titusville, Pa.

At many of our wells where water cooled engines are
used, we often find water in the water. In many instances
it is either alkali or salt water that is available for cooling
the engine.

This water has a bad effect on the engine, causing it
to corrode and clog up. We have found by experiment-
ing that the best way to eliminate this trouble is to run
two or three gallons of kerosene through the jacket a
couple of times each year.

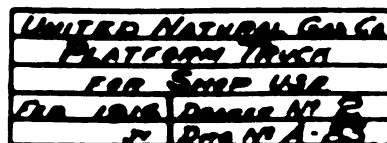
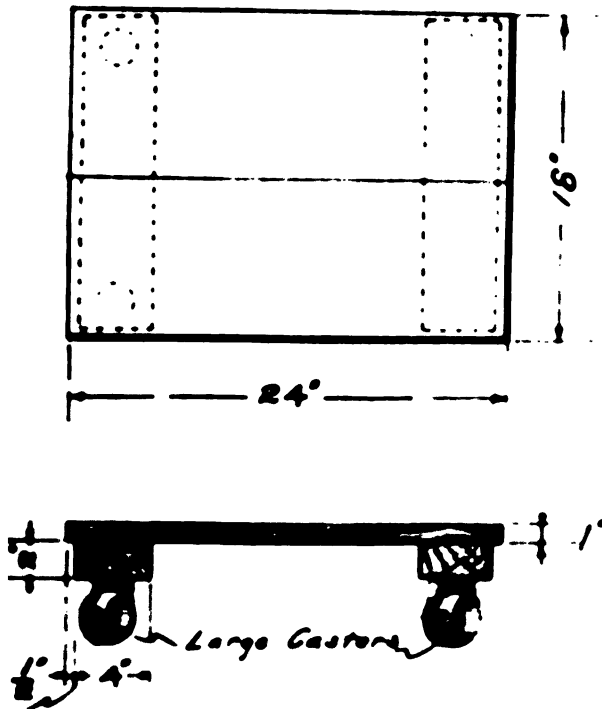
A water cooled engine will not wear for long
enough to cause it to be replaced before water is
turned into it.

By observing the above, I find that the water cooled
engine will last longer and will render much better ser-
vice.

Truthfulness is at the foundation of all personal excellence.—Smiles.

PLATFORM TRUCK, HEAVY SERVICE

Designed by United Natural Gas Company, Oil City, Pa.



Drawing A-83 is a little platform truck used in the plant and meter room for the purpose of easily handling valves, regulators and meters.

WAREHOUSE AND PIPE YARD

By Frank D. Wagner, United Natural Gas Company, Oil City, Pa.

The subject of arranging and maintaining a warehouse stock in the best and most efficient way is a broad one, but I would offer the following suggestions as a preventative of lost time and worry in the handling of warehouse stock efficiently.

When pipe is taken from the field to the warehouse it should be assorted and piled, and the threads used. If it is found that any of the joints are unfit for further use, these defective joints should be piled separately, or on what I term a "Rainy day pile." In inclement weather, this pipe can be inspected and will have to require rethreading, new collars or a split sec removed from it. When the joint is properly rethreaded, it can then be transferred to the pile containing good pipe.

In this world it is not what we take up, but what we give up, that makes us rich — Beecher

The same care should be exercised in the handling of all fittings. When fittings are received at the warehouse they should be examined and well oiled, and any that require repair should be placed in a section by themselves and later repaired. I would mention gates in particular. When removed from a line, a gate should never be used again, without first taking it apart and thoroughly cleaning and oiling it. The same should apply to stop cocks. The warehouse should be equipped with shelves and bins, properly labeled. This will prevent lost time when fittings or other material are required.

When a working barrel is removed from a well, it should never be placed in the warehouse stock until after it has been cleaned and well oiled, especially steel barrels, as they will rust very quickly. Many men have the idea that by filling a working barrel with oil and plugging each end of it that the barrel will be kept in good condition. In my opinion, this is a mistake. I believe the best way to care for a working barrel properly, is to thoroughly clean it and then draw a quantity of oily waste thru the barrel. This will leave a thin coat of oil adhering to the inside of the barrel. The barrel should then be placed on a bracket in the warehouse, so that it will be off the floor and air will pass thru it. We also have found that by packing a Klein or an O'Dell working barrel (that is used for pumping thru 1/2 inch pipes) with common cotton candle wicking soaked in kerosene, that the life of the barrel is prolonged.

In cleaning steel barrels, those that have become worn can be placed in good condition by changing the collars, end for end.

BUCKET FOR FILLING AUTOMOBILE RADIATOR

By M. J. Young, The East Ohio Gas Company, Youngstown, Ohio.

This bucket will eliminate the spilling of water when filling a radiator and by its use an automobile can be filled much easier.



Bucket for Filling Radiator

A bucket constructed like the one in the attached picture could be manufactured at a small cost over the price of an ordinary bucket.

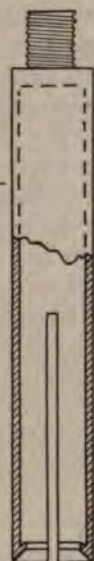
FISHING TOOL MADE FROM AN OLD "LET-GO" FOR WIRE LINES

M. A. Birmingham, United Natural Gas Co., Clermont, Pa.

This sketch shows a fishing tool made from an old "Let-go" for wire lines. This tool was made to catch the top of McGregor working barrels when the top of



Fishing Tool



Top McGregor
Working Barrel



FISHING TOOL FOR
McGREGOR WORK-
ING BARREL

the valve rods break and allow the rod to drop inside of the barrel.

The tool is made as shown, and the slots allow the tongs to spring sufficiently to slip over the shoulder on top of the barrel. We have been using this tool with good success for several years.

PROPER CARE OF PIPE

J. J. Kane, United Natural Gas Co., Ormsby, Pa.

All pipe that is piled in any warehouse yard should be gone over at least once each year and thoroughly oiled, not only should the threads be oiled, but the entire joint.

It has been my experience that pipe will show evidences of wear quicker when it is piled at a warehouse yard than if laid in a line and in use. This is particularly true where pipe is piled near a railroad, where passing locomotives will throw a spray of smoke and cinders upon it,

and which seems to have a very damaging effect upon the pipe.

Where main lines run thru oil producing districts, and where salt water is being pumped upon the ground, I find it to be a good policy to uncover the pipe at intervals of from 300 to 500 feet to see if the pipe is scaling off, or is becoming pitted. In such cases, I would advise that the pipe be uncovered and a good coat of oil or tar applied to the joints, which will preserve the life of the pipe considerably.

FORM TO PREVENT ERRORS IN ACCOUNTS

R. S. Cheatham, Fort Worth Gas Co., Fort Worth, Texas

Some clerical mistakes are made and the accounts become so "balled up" that when they are cold it is almost impossible for the person correcting them to know just what happened.

Amount \$.....	No.
Debit	Credit
Folio.....Line.....	Folio.....Line.....
Name.....	Name.....
Give full explanation:	
.....	
.....	
Signed.....	

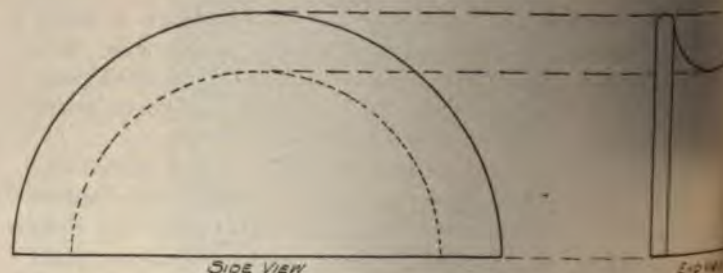
FORM TO PREVENT ERRORS IN ACCOUNTS

To assist in overcoming this and give us a permanent record of all corrections involving two different accounts, we now have a Transfer (T. R.) Slip, a copy of which is submitted. It will be noted that this printed form debits one account and credits another, with space for explanation and signature of party making the correction. We find this a great help.

BENDING METER LEADS

H. F. Tragesser, East Ohio Gas Co., Uhrichville and Dennison, Ohio

The sketch illustrates a simple and efficient device for bending meter leads. Usually considerable difficulty is experienced in bending them without their kinking. By



DEVICE FOR BENDING METER LEADS

using such a block they can be bent without any chance of this happening. It can be made of wood at a small expense and little trouble and should be carried with the meter setter at all times.

Men of few words are the best men.—Shakespeare.

METHOD OF PROVING METERS FOR LEAKS

A. M. Bethard, Columbus, Ohio

The Ohio Fuel Supply Company has developed certifications covering apparatus for testing domestic meters for leaks. A very unique arrangement of this apparatus is shown in the accompanying cut. The water and the air-pressure tank with necessary connec-



METHOD OF PROVING METERS FOR LEAKS.

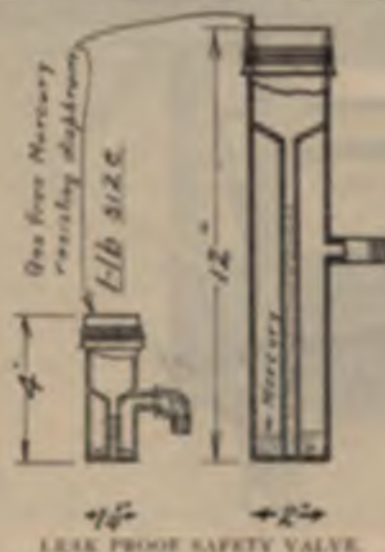
are mounted on a platform supported by casters, so it is movable as desired. A drain board is provided which covers approximately one-third of the top of the tank, so arranged with drainage scarfs that the drains immediately back into the tank.

LEAK PROOF SAFETY VALVE

T. H. Kerr, Columbus, Ohio

In connection with low pressure regulators, it has been customary to use dead weight safety valves or cumbersome oil seals.

A very cheap and equally satisfactory arrangement of this kind is found in the mercury seal, which has been developed in connection with testing of domestic meters by this Company. In meter testing, it was necessary to have a pressure of not to exceed three pounds, and absolutely free from leaks. This seal is arranged to give any pressure desired by varying the quantity of mercury



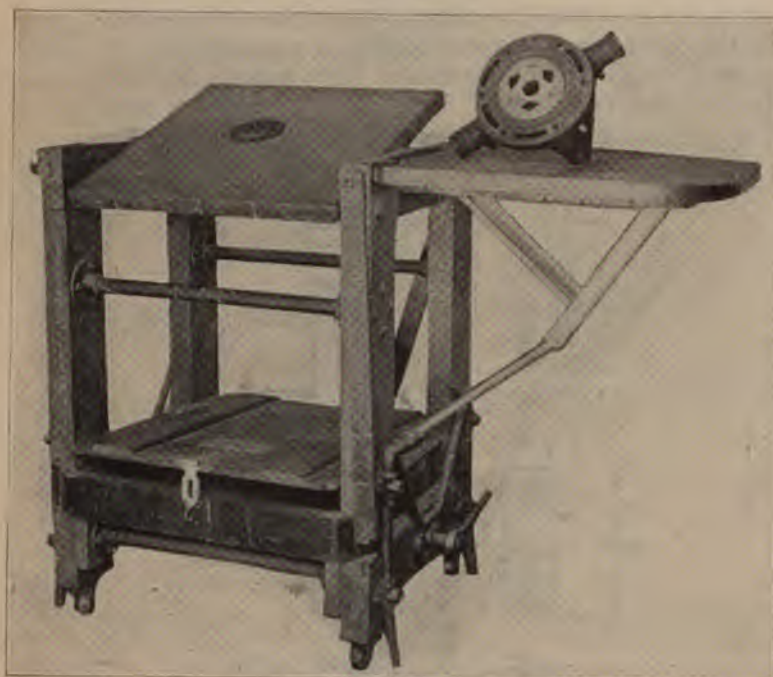
EXTERIOR OF LEAK PROOF SAFETY VALVE.

used. It requires approximately one-half pound to seal three pounds pressure, and correspondingly less for lower pressures. It is also provided with a diaphragm of suitable material which absolutely prevents the loss of any mercury, in case of blowing by excessive pressure. The entire seal may be constructed so as to occupy very little more space than the usual dead weight variety. For five pounds, the overall dimensions would be 2 inches in diameter by 12 inches high. For one pound, the size would be approximately 1 1/4 inches in diameter and 4 inches high.

GRINDING PLATE—STAND FOR RESEATING METER VALVE SEATS AND COVERS

John McDonald, Bradford, Pa.

The illustration explains the use for which the stand was designed. The stand is mounted on casters, with an eccentric attachment to shift from casters to solid legs.



GRINDING PLATE STAND FOR RESEATING METER VALVE SEATS AND COVERS.

The grinding plate is reversible so that coarse grinding cloth can be attached to one side and fine cloth on the other side.

IMPROVED PERCENTAGE-OF-ERROR CHART

J. H. Schalek, Pittsburgh, Pa.

One of the greatest time savers in the prover room is the "percentage-of-error chart." Especially is this true in a shop where twenty-five or more meters are tested daily. By the aid of a calculated chart, the time otherwise devoted to computation is diverted to other work. On the twenty-five meter per day basis, the time saved amounts to three-quarters of an hour or more, depending, of course, upon the ability of the tester. Most meter manufacturers publish such a table in their catalogues, but whether printed upon cardboards or bond paper, it becomes necessary to replace it because of its inability to withstand the greasy hands and the rough handling encountered in the meter room. The wrinkle is the preservation of this handy chart. It may be framed a la passe-partout with glass as the protecting element, but it would be effective only as long as the glass remains unbroken. By employing the materials and following the method outlined below, you may protect your chart

most satisfactorily and at the least expense.

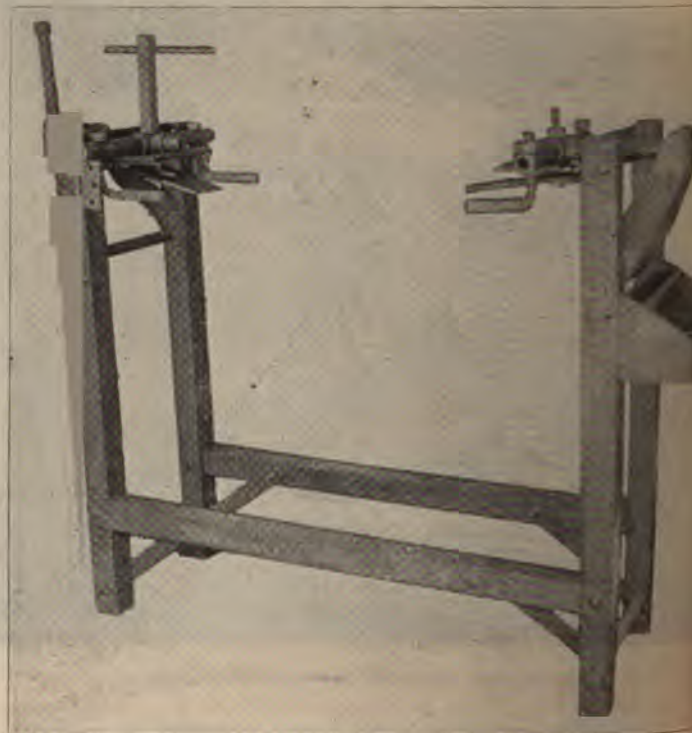
Get a piece of celluloid (a piece of an old automobile celluloid window will be just the thing) and from your druggist purchase, or otherwise acquire, enough liquid collodion to give the chart a coating. Coat the chart with the collodion solution, press the sheet celluloid firmly thereon and place between the leaves of a heavy catalogue, dictionary, or in a letter press and allow sufficient time to dry thoroughly.

When thoroughly dry, have your wife or sweetheart stitch the edges with heavy thread. If you haven't a wife or sweetheart get someone else's. This is, however, merely a suggestion and not advice to be blindly followed. After pondering over the situation in the case where there is no wife, I am of the opinion that safest way out of this difficulty is to do the stitching yourself. If more rigidity in the chart is deemed necessary, a piece of cardboard or tin may be stitched to the back.

REPAIR STAND FOR NUMBER 4 EMCO METERS

John McDonald, Bradford, Pa.

The stand illustrated was designed to make the repair of this type of meter much easier. The meter can be turned over without the aid of an additional man and avoids the possibility of the meter being dropped which would cause damage to meter and possible injury to the workman.



REPAIR STAND FOR NO. 4 EMCO METERS.

As the illustration shows, the meter parts are suspended on the stand and provision is made so that the meter can be quickly turned over by releasing the hinge and clasp the bar.

A LINEAR CHART FOR CALCULATING PIPE LINE CAPACITIES

C. H. M. Hooton, Houston, Texas

A very convenient means for calculating the capacity of pipe lines for transporting gas is submitted herewith in the form of a linear or nomographic chart.

This chart is to be used in solving graphically the gas pipe line equation:

$$Q = C \sqrt{\frac{P_1^3 - P_2^3}{L}}$$

in which

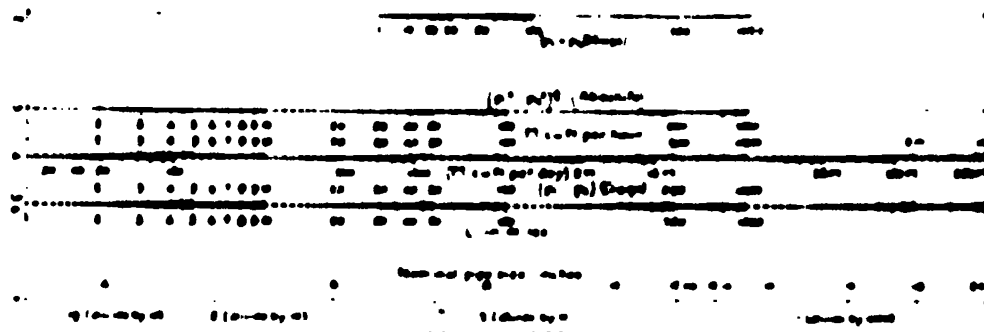
Q =

— Cubic ft. of 60 or 64 Gravity gas passed per unit time

C = Coefficient depending on the pipe size, etc.

P_1 = Absolute Pressure at the High Pressure end of the line hereafter referred to as the Initial Pressure, and Gage Pressure plus 14.4 lbs.

P_2 = Absolute Pressure at the Low Pressure end of the line hereafter referred to as the Final Pressure, and Gage Pressure plus 14.4 lbs.



LINEAR CHART FOR CALCULATING PIPE LINE CAPACITIES

L = Length of the line in Miles

R = Weymouth's coefficients as published in the *Flowmeter Manual*, corrected to 64 Specific Gravity and used in the construction of this chart.

Assume that the Gage Pressure on both ends of a line given length and size are known. To calculate the quantity of gas that this line will carry, first find the C on the Number 2 scale that corresponds to the sum of the Gage Pressures. With a straightedge connect point to the position on the Number 5 scale corresponding to the difference of these Gage Pressures. Note point where the straightedge crosses the Number 3 scale.

Connect this latter point with the position on the Number 6 scale corresponding to the length of the line also, noting the intersection with the Number 1 scale.

This intersection point to the position marked with pipe size on the Number 7 scale and then read from Number 4 scale the answer either in cubic feet per hour or cubic feet per day.

In case the gravity of the gas to be transported should vary considerably from 64, a correction may be applied by noting the distance between the observed result (64 gravity) for any specific case and the true result (calculated) and applying this correction either by reading at this determined distance from the point indicated by the straightedge or by displacing the quantity scale vertically through a distance equivalent to this correction.

With this chart, not only can one solve for quantity, but, with this figure known, the other factors, such as pipe sizes and pressures, may be determined.

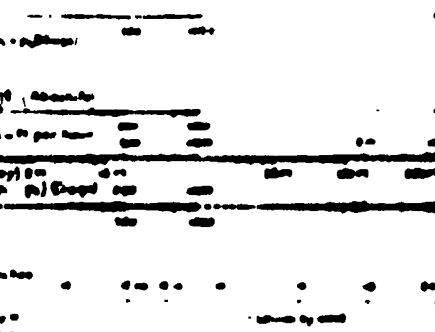
Suppose, for instance, that the quantity desired to transform through a line of given length is known, as well as the Initial and Final Pressures. To estimate the size proceed as follows:

Connect 2 and 5, get 3.

Connect 3 and 6, get 1.

Connect 1 and 4, and read above the point of intersection on scale Number 7 the nearest pipe size.

In estimating the pressures, either Initial or Final, the quantity, the length, and the size of the line are known and it is desired to determine the other pressure, the following method is recommended:



Connect 7 and 4, get 1.

Connect 1 and 6, and read from scale Number 3 the numerical value of the quantity.

$$Q = C \sqrt{\frac{P_1^3 - P_2^3}{L}}$$

Knowing either P_1 or P_2 , the other is easily calculated.

TO PROPERLY DRILL STEEL

C. H. M. Hooton, Houston, Texas

In drilling steel, use the very best grade of steel as the drill's master being the proper grade.

The drill should be ground very blunt in order that a heavy pressure may be applied to it. The drill should be turned slowly and kept wet with turpentine.

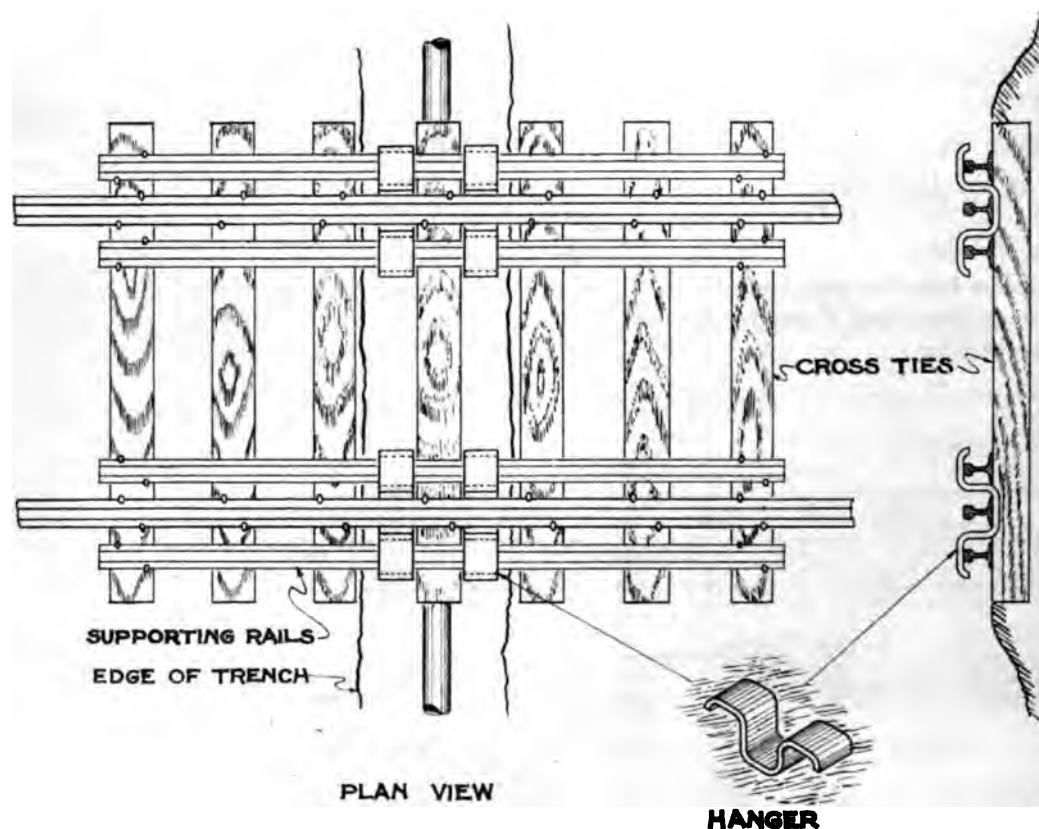
SUPPORT FOR RAILROAD TRACKS

Engineering Department, The East Ohio Gas Company, Cleveland, O.

Hangers which eliminate timbering while installing gas mains or other underground construction.

For gas work, they consist of four hangers to a set for each track and are used two to each rail above the trench.

The hangers are supported by two pieces of rail resting upon the ties on both sides of trench and lying close to and parallel to the rail being supported, which rests within the hangers.



They may be left in position until the roadbed has been restored and settlement taken place, they may be removed without damage to track ballast. "Safety First" demands, on the part of railroad companies, require that nothing be neglected in track maintenance.

This method is effective and inexpensive, eliminating delay in installation and removal, which is found in present method of timbering.

HELPS MAKE A LEAK CLAMP RUBBER HOLD

G. W. Pemberton, Gainesville, Texas

I have found that by putting two coils of asbestos wickpacking, saturated in white lead ahead of the collar leak clamp rubber has made a good job.

PRACTICAL BLUE-PRINT PROTECTOR

J. H. Schalek, Pittsburgh, Pa.

Heretofore blue prints for field use had to be carried in special metal tubes to preserve their legibility. Some blue prints are very costly and during the rush seasons are difficult to obtain. Pipe joint grease, ditch clay, and wet water soon makes a blue print useless. If the blue print—as it comes from the printer—is treated as follows, it is possible to lengthen its period of useful-

ness to an unbelievable extent:

Lay the print, face up, on a flat surface. Cut a can of hard paraffin wax into fine shavings and sprinkle the print liberally. Then, with a gas iron, heated to a temperature normally used in ironing clothes, go over the whole surface of the print. The melted wax thoroughly saturates the paper making it waterproof, enabling one to wash off any colored dirt encountered in the various gas fields, and even grease can easily be removed by an oil moistened rag. The blue print prepared according to the foregoing may be folded or rolled with as much ease as the unprepared print. Also, tests have shown that it is much more difficult to tear the print after it is waxed. It does not have the sickening yellow color of shellacked prints and is much more flexible.

METHOD OF PROVING METERS FOR LEAKS

A. M. Bethard, Columbus, Ohio

Ohio Fuel Supply Company has developed certifications covering apparatus for testing domestic meters for leaks. A very unique arrangement of this test is shown in the accompanying cut. The water and the air-pressure tank with necessary connections



METHOD OF PROVING METERS FOR LEAKS.

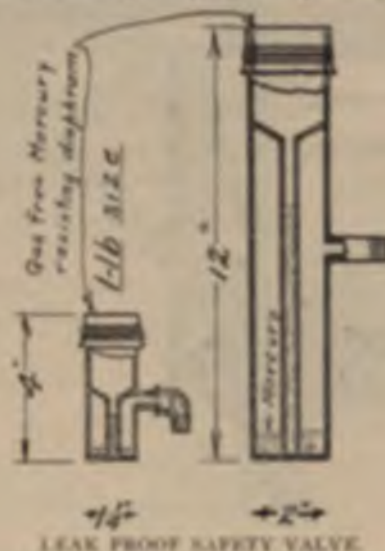
are mounted on a platform supported by casters, and is movable as desired. A drain board is provided which covers approximately one-third of the top of the tank, so arranged with drainage scarfs that the drain immediately back into the tank.

LEAK PROOF SAFETY VALVE

T. H. Kent, Columbus, Ohio

In connection with low pressure regulators, it has been customary to use dead weight safety valves or cumbersome oil seals.

A very cheap and equally satisfactory arrangement of this kind is found in the mercury seal, which has been developed in connection with testing of domestic meters by this Company. In meter testing, it was necessary to have a pressure of not to exceed three pounds, and absolutely free from leaks. This seal is arranged to give any pressure desired by varying the quantity of mercury



EXTERIOR OF LEAK PROOF SAFETY VALVE.

used. It requires approximately one-half pound to seal three pounds pressure, and correspondingly less for lower pressures. It is also provided with a diaphragm of suitable material which absolutely prevents the loss of any mercury, in case of blowing by excessive pressure. The entire seal may be constructed so as to occupy very little more space than the usual dead weight variety. For five pounds, the overall dimensions would be 2 inches in diameter by 12 inches high. For one pound, the size would be approximately 1 1/2 inches in diameter and 4 inches high.

BAR FOR BORING AND RETHREADING COMPRESSOR HEADS FOR FALSE VALVE SEATS

J. T. Leight, Sigel, Pa.

Boring bar and rethreading tool such as we use for boring Laidlaw-Dunn Gordon Compressor heads for false valve seats. This requires two bars of $2\frac{1}{4}$ " machinery steel, one threaded with 16 threads per inch as illustrated and another with 8 threads per inch.

Part 1—The boring bar is threaded with 16 threads per inch. Squared at top to fit a Dresser Coupling Ratchet Wrench. The other end is fitted with a $\frac{3}{8}$ " sq. high speed steel cutting tool with a $\frac{3}{8}$ " hollow set screw

Part 7—High speed steel cutter.

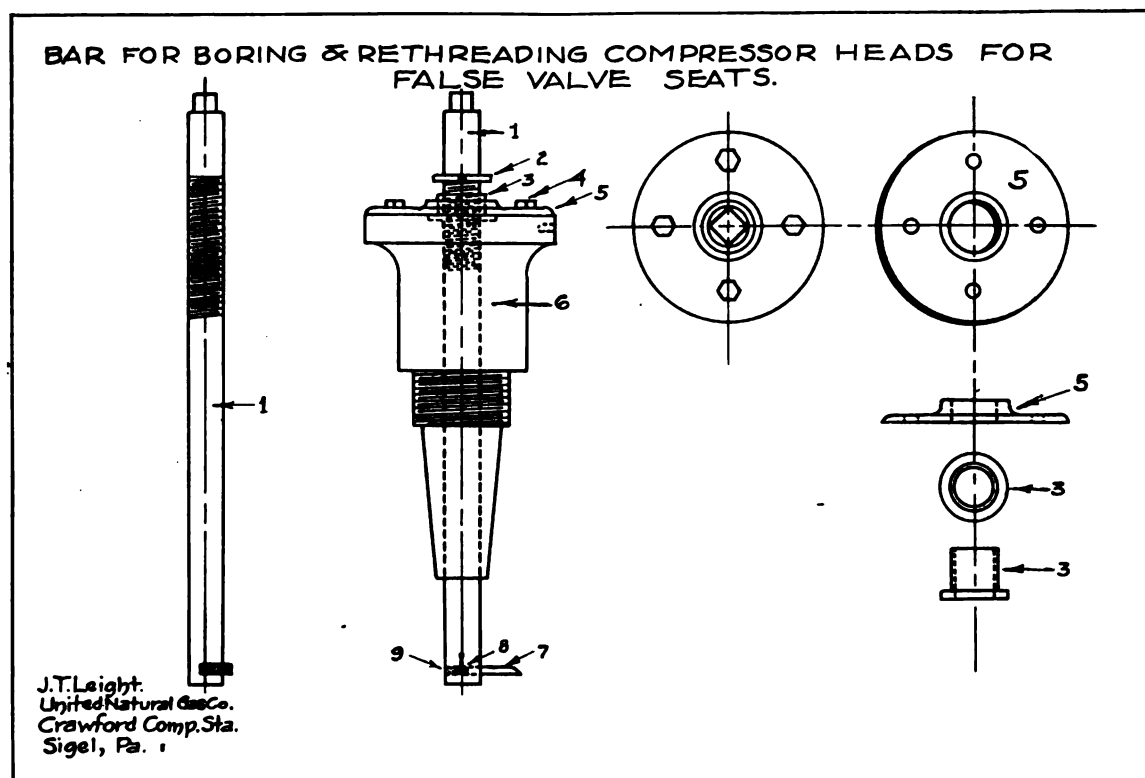
Part 8—Hollow set screw for clamping cutter in position.

Part 9—Hollow set screw for feeding cutter.

TO REMOVE PAINT FROM PIPE OR OTHER SURFACE

S. A. Schwab, Shippensburg, Pa.

Wash the painted surface with potash dissolved in water. Use a swab, thereby preventing the liquid from touching the hands.



to clamp cutter in position with another to feed same. Rethreading bar is fitted the same except threads are 8 per inch and cutting tool is ground as for threading in a lathe.

Part 2—Is a stop collar fitted on thread of boring bar only fitted with a set screw in order to set at any distance, in order to cut seat for valve shoulder.

Part 3—Is a threaded collar with a shoulder at bottom end which is turned to a working fit in Part 5 and counter bored in Part 6.

Part 4—Is $4\frac{1}{2}$ " cap screws which hold bar and Part 5 in position.

Part 5—Is plate which clamps Part 3 tight when not cutting a shoulder for valve.

Part 6—Guide for bar, same screws into head where valve plug cap is removed drilled for a pin spanner wrench for setting up.

TELL FOLKS WHAT TO DO WITH DIAL METER CARDS

R. S. Cheatham, Fort Worth, Texas

Many companies have a set of dials printed on their gas cards for the convenience of their customers in reading their own meters, but much of the benefits are lost through failure to inform the customers what these dials are for. A short explanation will get better results. We suggest the following:

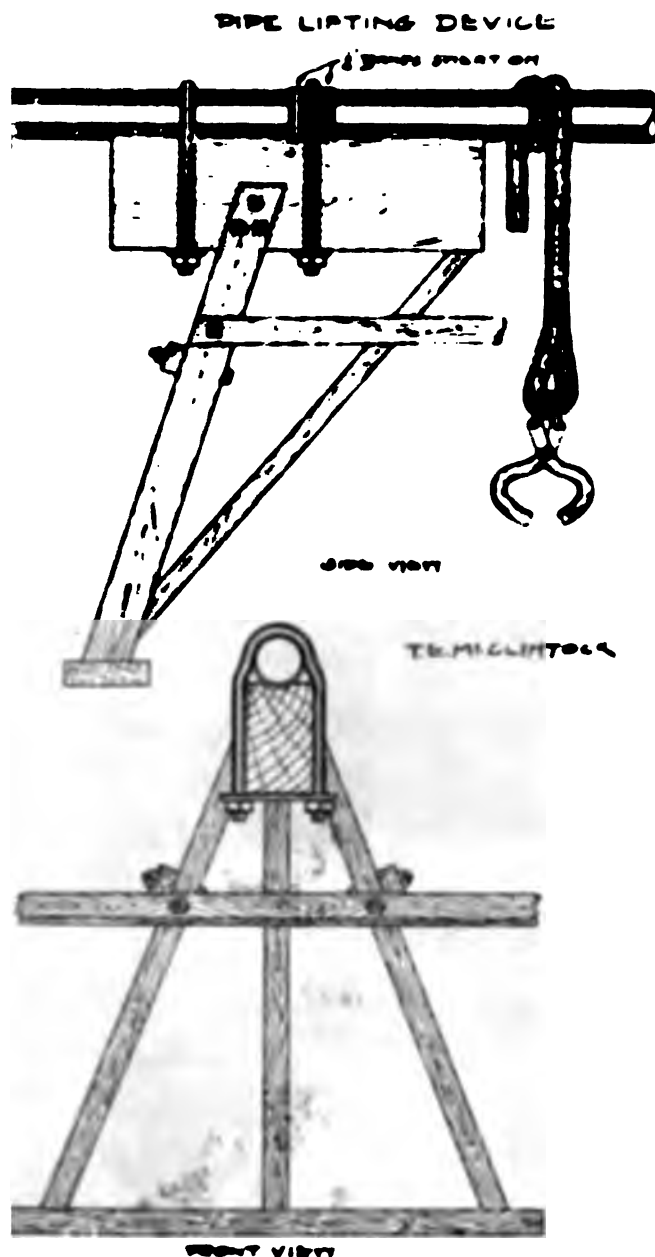
"If you question the meter reading, READ YOUR OWN METER. Read meter and punch with pin exact position of hands on this diagram and bring to our office."

The dials are printed right below this and usually get good results.

TRANSMISSION PIPE LIFTING DEVICE

T. F. McMillen, Youngstown, Ohio

wholly built and braced ditch-horse except that the top brace does not cross the trench, (on account of saving the rope) but is securely braced, it has long



ping arms. A piece of 4-inch pipe is strapped to the top brace with "U" bolts running on $\frac{1}{2}$ -inch bands and to pipe.

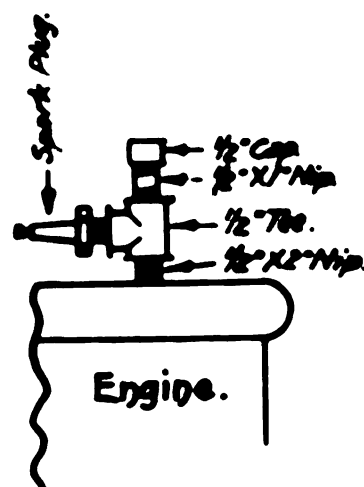
sort handled calipers grip the pipe in trench, they are attached to a stout rope which has two turns around pipe on the horse. Tongs are applied to the 4-inch pipe which acts as a winch and has great lifting power.

The East Ohio Gas Company has used this device in lifting 11 miles of 10-inch pipe and found it very satisfactory.

TO PREVENT SPARK PLUGS FROM FOULING WITH OIL ON FORD ENGINE

M. A. Birmingham, Cincinnati, Pa.

To prevent spark plugs from fouling with oil on a Ford engine, I would suggest the use of two $\frac{1}{2}$ -inch nipples, one $\frac{1}{2}$ -inch tee and one $\frac{1}{2}$ -inch cap, with the



TO PREVENT SPARK PLUGS FROM FOULING WITH OIL ON FORD ENGINE

spark plug screwed in the side of the tee. This will prevent any plug from fouling with oil when the piston is leaking oil by the rings.

TO KEEP THE FRONT WHEELS OF THE OLD "FLIVVER" GREASED

W. A. Hume, Cincinnati, Pa.

Solder an "Alemite" connection to the end of an extra hub cap and when you wish to grease the front wheels, take the cap off and install the special one with the "Alemite" connection and attach the "Alemite" gun and give it a shot.

USE OVERSIZE RUBBERS ON COLLAR CLAMPS

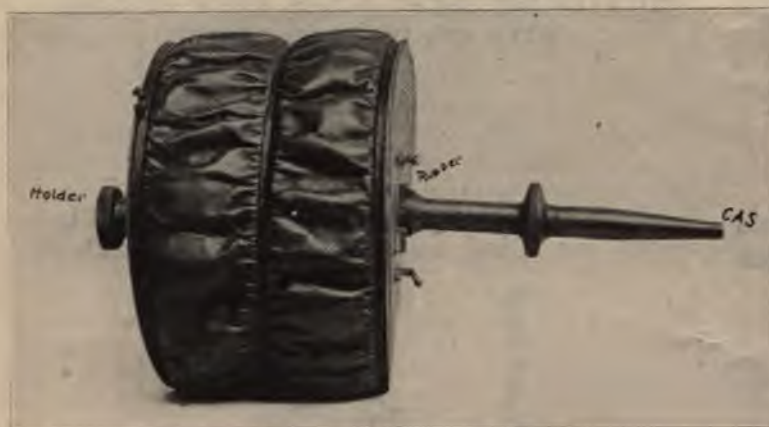
C. W. Pendleton, Canton, Mo.

I have found that by using oversize rubbers on collar clamps they can be used very successfully. Use such rubbers as 10-inch or 12-inch Dwyer rubbers on 6-inch or 8-inch clamps cut down to fit the clamp and by putting the rubbers on backward.

DIAPHRAGM TESTING TOOL

John McDonald, Bradford, Pa.

The illustrations show diaphragm testing tool detached, as well as attached.



DIAPHRAGM TESTING TOOL FOR 10-LT. METERS.

To make ready for use, place the part with the gasket on the meter. Insert the threaded rod through the meter. Screw the threads on this into the hole on the



DIAPHRAGM TESTING TOOL, DETACHED.

gasket holder and slip the last section over the rod and tighten on opposite side of the diaphragm, or the gas end of the tube.

DEVICE TO ARREST LEAKAGE DUE TO FAULTY WELDS IN CENTER RINGS

Edward Gordon, Columbus, Ohio

The photograph shows the device which has been used with much success in stopping leakage on the H. P. main lines where faulty welds in the C. R. allow leakage.

It consists of an iron plate 3 inches by 6 1/2 inches by



DEVICE TO ARREST LEAKAGE IN CENTER RINGS.

about 1 inch in thickness, tapped, as shown, for 1/2-inch by 2-inch set screws. The ends of the plate are cut

down about 1/2 inch, so that, by loosening a bolt or two, the plate can be slipped under the follower and the coupling bolts tightened. Under this plate a loose iron plate, cut from a piece of same-sized pipe upon which the repair is to be made (about 3-inch by 5-inch) is used and next to the C. R. a piece of 1/4-inch sheet packing.

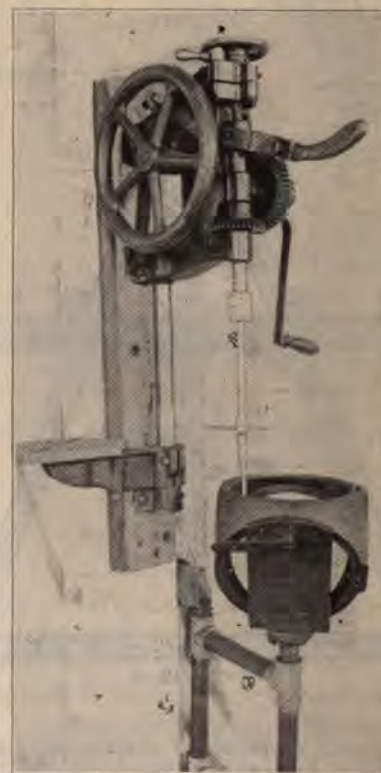
When the device is in place the set screws are tightened uniformly and in practically all cases where the job is carefully done the leak is entirely shut off.

The photograph also shows a device for shutting off small leaks under the followers, on the inside. It consists of a hook arrangement made of 1/4-inch iron 3 inches wide, shaped on the end to conform to the outside of the center ring. Ahead of this we use 3/8-inch hard spiral packing and tighten it in place by the two set screws.

HOLDER AND TAP FOR BOLT AND NUT METERS

John McDonald, Bradford, Pa.

The device illustrated here is for use in tapping out bolt meters, which are arranged on a stand with a quick attachment and are made true to alignment of tap,



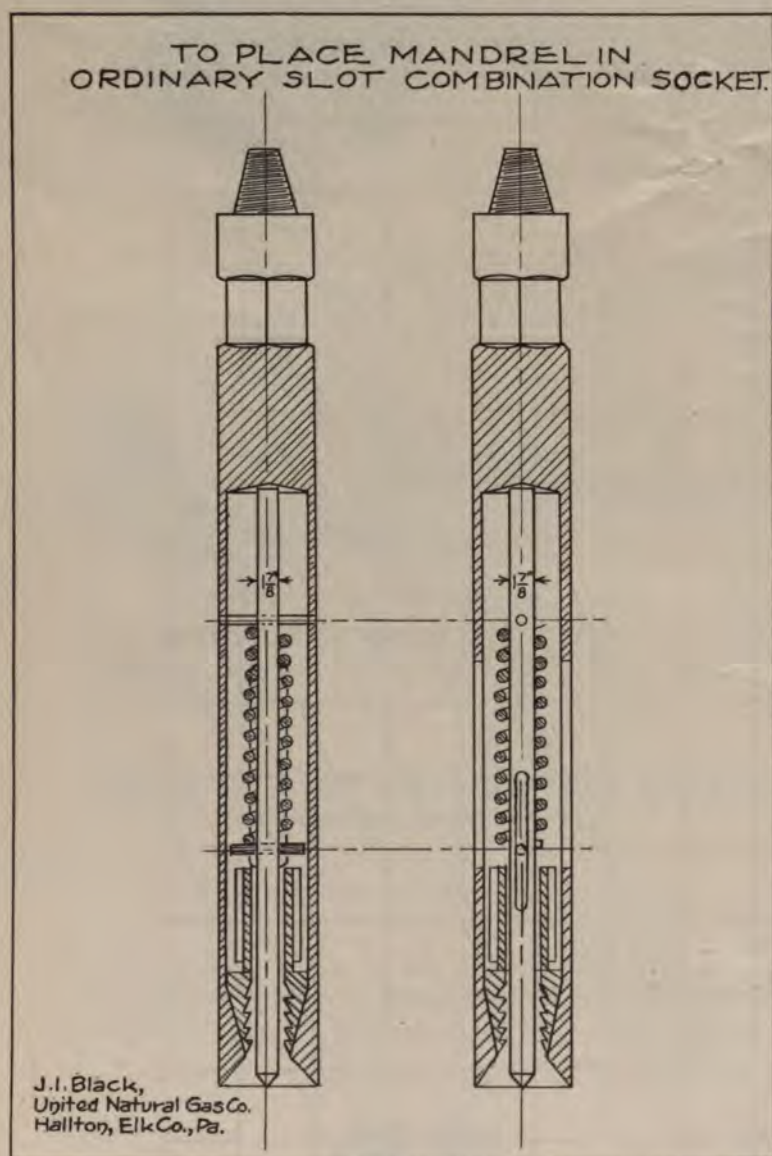
HOLDER AND TAP FOR BOLT AND NUT METERS.

so the tapping is not staggered. A special holding tool for the tap is then inserted in the drill press and taps are quickly made and the radius of the stand comes true when turning to the next hole to be tapped.

METHOD OF PLACING MANDREL IN COMMON SIDE SLOT COMBINATION SOCKET

J. I. Black, Hallton, Elk Co., Pa.

In order to convert the above type of combination socket into a mandrel socket, take a piece of $1\frac{7}{8}$ -inch round iron or steel (this size for 2-inch tubing) and drill a $\frac{7}{8}$ -inch hole above the slot in the socket. Then drill a hole in the $1\frac{7}{8}$ -inch round bar the proper distance from the top end, in order that the mandrel will be held to the top of the socket. Then drill another hole in the mandrel the proper distance down in order that the pin will rest on top of the sleeve.



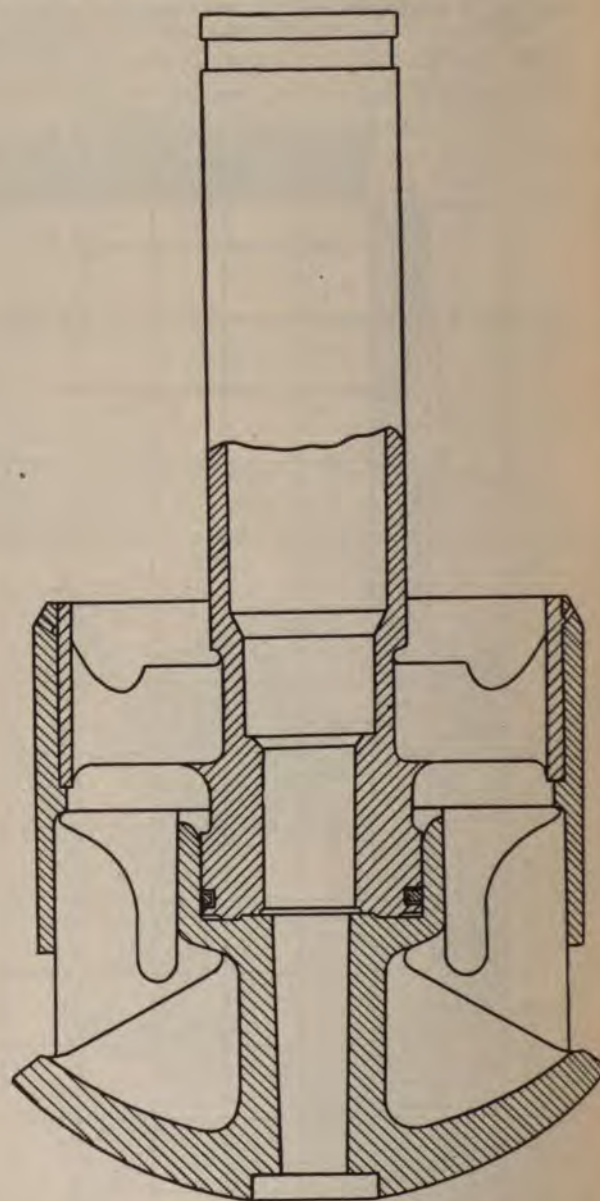
You will note that these holes are drilled at right angles to the side slot; being drilled in this manner will prevent the lower pin from working out.

In order to remove the slips and sleeves through the side slot, the top pin is removed and the spring is slid up in the ordinary manner, then the sleeve and the slips may be removed through the slot in the side of the socket.

IMPROVED CUT-OFF AND MIXING VALVE

Victor Cagnon, Washington, Pa.

This valve is of much better type of construction, as we substituted boiler plate, cold rolled, and machine steel welded, for the cast steel.



IMPROVED INLET VALVE - SNOW GAS ENGINE

VICTOR CAGNON, ASST. FOREMAN

WASHINGTON MACHINE SHOP,
THE MANUFACTURERS LIGHT & HEAT CO.

We have increased the capacity, or cushion seat, and installed a leak-proof ring to eliminate wear on plunger, thereby insuring against loss and expense of breakage, and also much better action while in use.

IMPROVED DOUBLE BALL AND SEAT FOR THOMPSON OIL PUMP TO KEEP GAS FROM WORKING ON VALVES

S. H. Phillips, Hundred, W. Va.

The wrinkle here shown is a double ball and seat in top of Thompson Oil Pump. This can be made out of old lower valve bodies without much cost, as you can find those in your junk pile around your tool house.

Take the top part of the lower valve of Thompson

pump, bore out in lathe and fit in seat the end tapered to receive a $\frac{1}{4}$ inch pipe. Then thread and fit cage of pump, and the other end will screw on sub in pump.

This gives you two valves on the top of the pump. This will pump any well where gas lodgers the valves. The top valve on the Thompson pump is a suction valve, and on any gassy well the gas taken in with the oil holds the ball off the seat, and therefore the pump loses suction or lift.

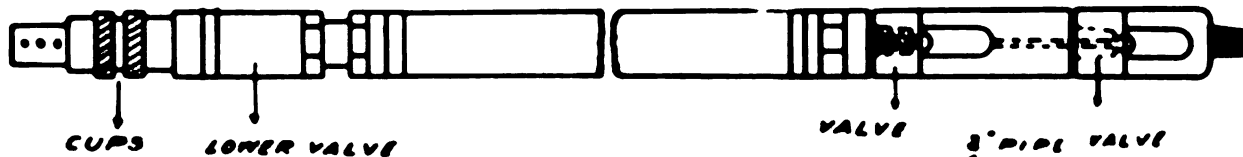
I have tried with all makes of improved pumps to get rid of gas working on valves in a well, and this is the best method.

THOMPSON OIL PUMP WITH DOUBLE BALL AND SEAT

S. H. PHILLIPS

HUNDRED, W. VA.

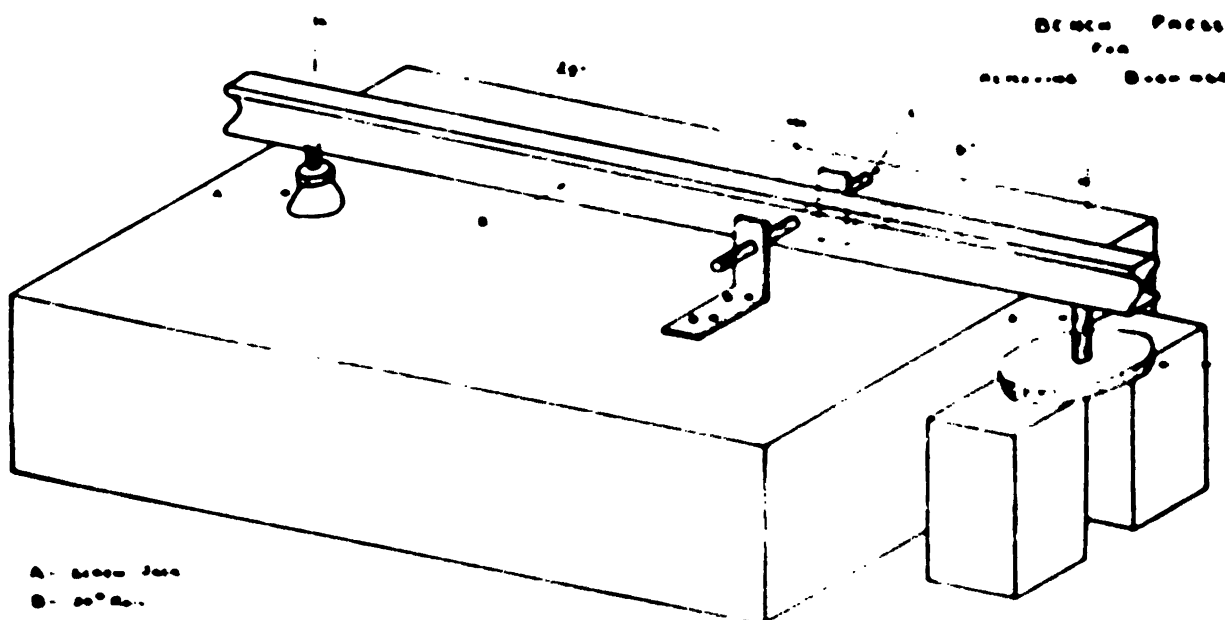
THE MANUFACTURERS LIGHT & HEAT CO



BENCH PRESS FOR REMOVING BUSHINGS AND SLEEVES

L. A. Wood, Warren, Pa.

This vise can be used for removing gears from shaft also bushings and sleeves. It can be taken apart and placed under a bench or the railroad iron can be left on the bench to be used for anvil in place of vise which is too commonly used for an anvil.



- A - 2 inch iron
- B - 20 inch
- C - 1 inch iron
- D - 2 inch iron
- E - 2 inch iron

THE MANUFACTURERS LIGHT & HEAT CO
WARREN, PA.

SPECIAL FOUR PIECE CLAMP FOR STOPPING A LEAK IN A BROKEN 6x2 CAP

M. A. Birmingham, Clermont, Pa.

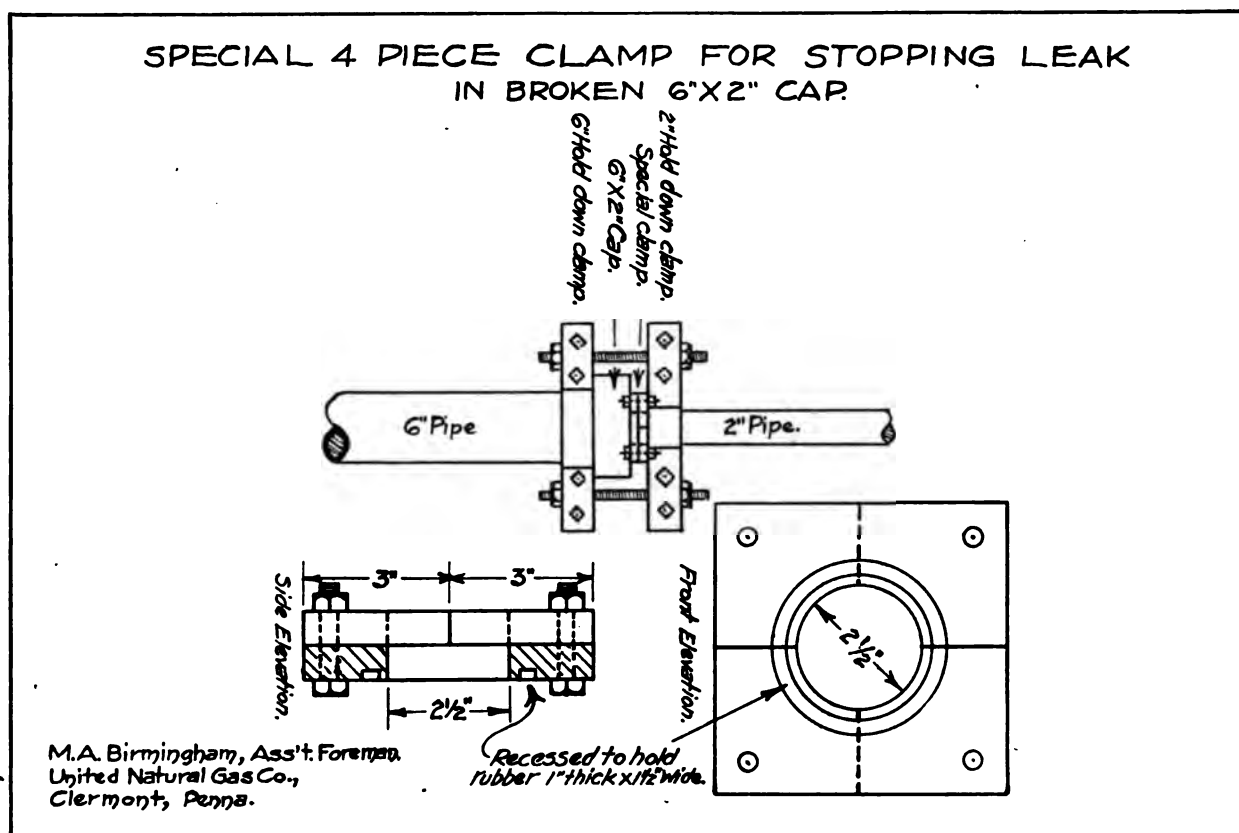
The sketch shows a four-piece special clamp for stopping a leak in a broken 6x2-inch cap. The break was caused by a crescent shaped piece breaking out of cap where it was tapped for the 2-inch center opening. This allowed the gas to escape around the threads of the 2-inch nipple.

The special clamp is made in four pieces, as shown on this sketch. The four pieces are bolted together in the corners and a recess is turned in the center around

USE TWO REGULATORS ON ENGINE LINES

R. E. Benninger, United Natural Gas Company

I have found by experience when we have more than two engines to get good results from them we have two regulators on our fuel line that gives our pressure a very steady flow. For example, if our pressure is fifty pounds and we want it at one pound we use a regulator from fifty to ten pounds, and one from ten to 0. We are getting better results than when we only used one regulator and have stopped considerable back firing.



the 2-inch opening to permit the rubber to seat in same. The clamp can be taken to the leak and put around the 2-inch pipe in sections, then bolted together. In addition to the special pieces, it requires a 2-inch hold-down clamp and a 6-inch hold-down clamp. The 6-inch hold-down clamp is placed back of the 6x2-inch cap on the 6-inch pipe and the 2-inch hold-down clamp is placed back of the special clamp around the 2-inch pipe. The two collar leak clamps are then drawn together with two double end bolts, which tighten the special clamp against the face of the cap and completely stops the leak.

The use of this clamp eliminated the draining of several miles of 8-inch line to repair same.

GAUGING GAS WELLS

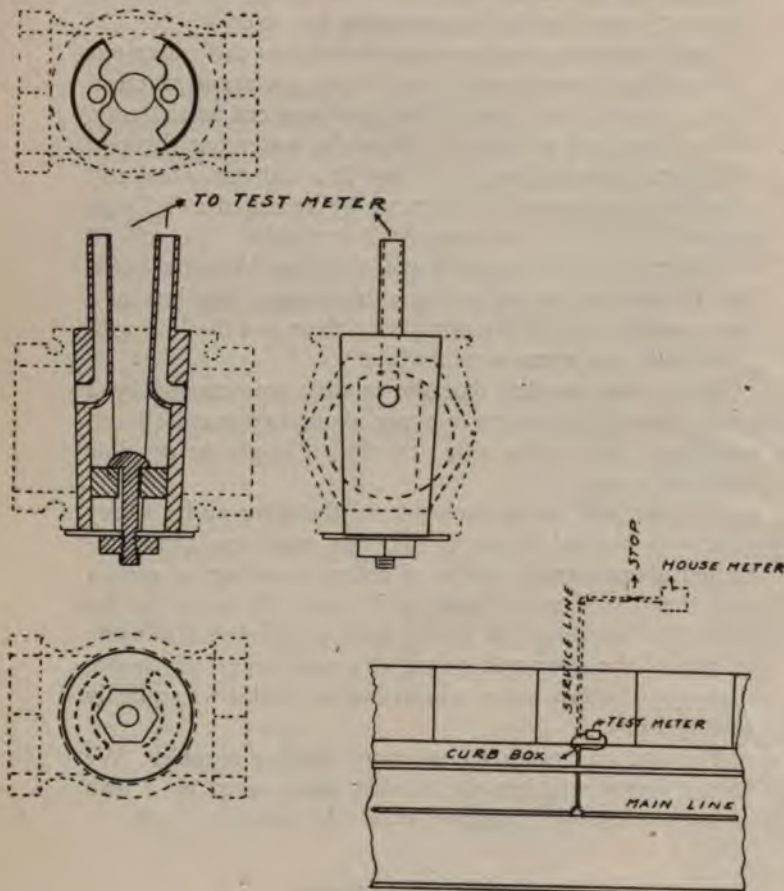
C. C. Lynn, Shippensburg, Pa.

In order that a well tender may know the exact condition of his well, he should take a 5-minute gauge of the well at least once a week. That is, when he visits the well, he should take the line pressure and then close the control stop and ascertain exactly what his well is doing, or if it compares favorably with the previous week's gauge.

If the well does not gauge up properly, it shows that something is wrong. Possibly water has broken in on it or fluid has raised over the sand sufficiently to hold back the gas and you will know by this method that the well requires attention.

LEAK DETECTOR FOR SERVICE LINE

Clyde Hudkins, Bellaire, Ohio



LEAK DETECTOR FOR SERVICE LINE

CLYDE HUDKINS, FITTER
BELLAIRE OHIO
THE MANUFACTURERS LIGHT & HEAT CO

All details of this wrinkle are shown in the illustration.

ADDRESSOGRAPH CHANGE SLIPS

L. W. Cole, Dallas, Texas

When our Addressograph Department was first installed, and for several years afterwards, additions and cancellations to the original list for each town handled by us were taken from a long typewritten list of connects and disconnects, mailed to the General Office at the end of each month, from each local office. These lists were made up in the local offices from the connect and disconnect slips and the making of them took up a great deal of time and trouble. So, to improve this manner of handling, the following system was installed:

Put off until tomorrow only the things you should not do at all

Every new consumer, or every consumer disconnected, is handled by a connect or disconnect slip issued in the local office and the copy of this connect or disconnect left in the book. In addition to these two sheets, we now have a sheet, or half sheet, which is automatically made out when each order is issued. These slips are headed "Addressograph Change Slips" and show the name, address, and folio of the customer. They are filled out at the same time the connect or disconnect slip is issued to the meter setter and involve no additional work. At the end of each week they are pulled out of the book and mailed to the Addressograph Department. This manner of handling does away with the possibility of error made in copying. This form, of course, is of value only in towns where it is necessary to mail in addressograph changes.

A PAPER SAVER

W. A. Hovis, Clermont, Pa.

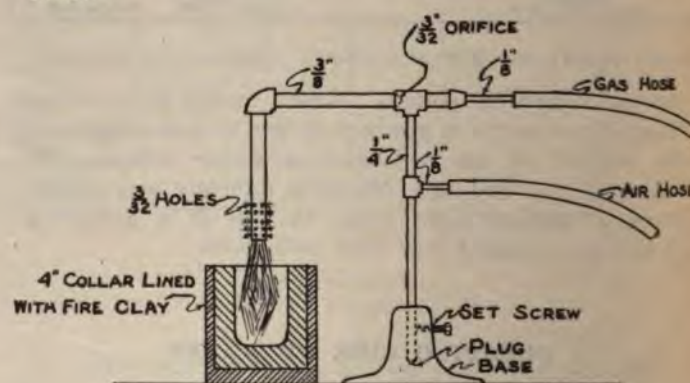
When replying to a letter, make the carbon copy of your reply on the back of the letter that you are answering.

BLOW TORCH FOR SOLDERING AND TEMPERING

J. A. Abrams, Cleveland, Ohio

A handy equipment for repair department.

Heat may be regulated to desired degree by valves on air and gas lines. The holes at point of combustion are necessary in order to prevent blowing out the flame.



BLOW TORCH FOR SOLDERING AND TEMPERING

J.A.ABRAMS THE EAST OHIO GAS CO. CLEVELAND, OHIO

A fire-clay receptacle or ordinary fire brick are necessary in order to prevent burning of bench.

The torch is made of pipe and fittings and may be made in various shapes to suit different needs.

METER ROOM CARD INDEX RECORD

L. C. Turber, Youngstown, Ohio

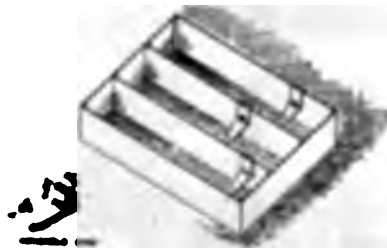
Make up a pan eight and one-half inches wide, three inches deep, and a length sufficient to hold the cards, containing the records of each meter, for a month. Partition this pan lengthwise through the center and provide three movable stops or holders of the same gauge of galvanized iron as the pan, which will appear as follows:

There is sufficient spring to the bend of these holders to keep them in place, yet they can be slid either way along the edge of the pan over which they fit, to take care of the increasing or decreasing pile of cards.

Fill in the incoming record of each meter on a separate card and place these cards in the left hand compartment of the pan. These cards cover all meters in stock and are retained in place by one of the holders.

Use the other two holders to divide the right hand compartment into two parts, in one of which place the cards for meters sent out but not yet reported as set, such as on trucks, etc.

In the other part place the cards of meters set, of which the record is complete.



After each card with record
is placed the card is held in place

The complete record will be as follows:

No. 702278
State 305 HUD
From 1711 Glenwood
Date 3-11-21
In Test I F
Remarks Rusty glass broken
Size 5 Lt.
Make Cleveland
Set at 2719 Mahoning
Date 3-18-21
Out Test 1 S

When meter has been repaired, have each repair man mark on the back of meter tag what repairs were made and sign his initials, then at the time meter is given the prover out test, stamp on the back of index card with hand stamp and check off what repairs were made, write in the name of the man making the repairs, as follows:

Low Fire Test X
Water Test X
Ground Valves X
Repacked Boxes X

Adjusted Tangent
Painted
Replaced Index Glass

X

John Doe, 3-15-21

At the end of the month, when ready to make up the monthly inventory, it is a short job to count the meters in stock.

If count and cards do not tally, some one has been "asleep at the switch" and discrepancies must be corrected at once.

At the time of making monthly inventory, cards for all meters set during the month are removed and placed in another pan, sufficiently large to hold a year's supply in numerical order, regardless of size or make of meter.

In this way the only information required to look up the record of any meter is the number.

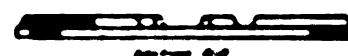
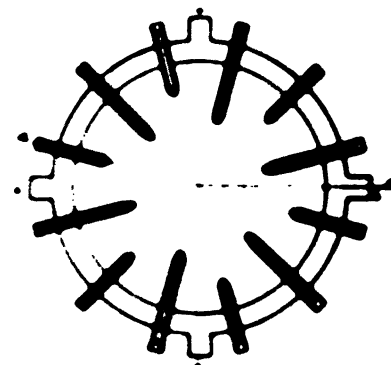
From the above description this system may seem complicated, but when put into actual use is very simple and forms a record that will enable the man in charge of meter room to supply any information desired in the office, also to keep a check on the work done by each man making the repairs.

This system by actual test has cut the time of making up the monthly inventory 60 per cent and gives an absolute record, limited only by the number of years it has been in use.

ADJUSTABLE RAISED SKELETON LID

Charles E. Hammond, Columbus, Ohio

This lid is made in two sizes, 7-inch diameter and 8-inch diameter. By sawing off the lugs (L.) the required amount, the seven-inch lid may quickly and easily



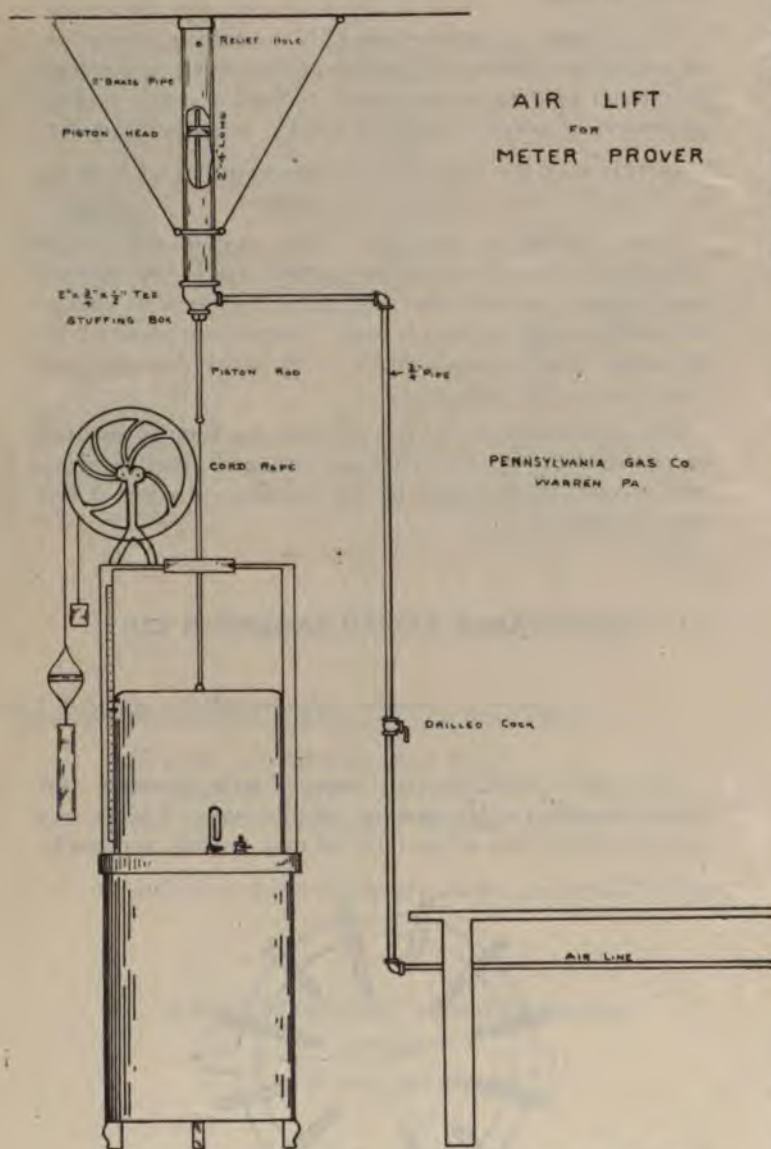
be made to fit any stove opening from 7 inches to 8 inches and in the same way the 8-inch lid may be made to fit any opening from 8 inches to 9 inches.

Competition is the balance wheel which keeps business healthy

HOIST FOR LIFTING METER PROVER BELL WITH AIR

* Distribution Division, Pennsylvania Gas Company, Warren, Pa.

The idea of this hoist is to put a direct lift on bell of prover so as not to have any friction on prover when meter is being proved. The plunger in hoist will drop down automatically after air pressure has been relieved



HOIST FOR LIFTING METER PROVER BELL WITH AIR.

by hole in cock that controls air. You will note that end of plunger rod is about two inches above plunger and relief hole in top of bar should be placed so that when end of rod is against cap, hole will be covered by plunger valve. By lengthening and shortening cord rope, this hoist is automatic, that is, when plunger gets to top of barrel, prover should be up to its required height and will remain there until delivery air cock is

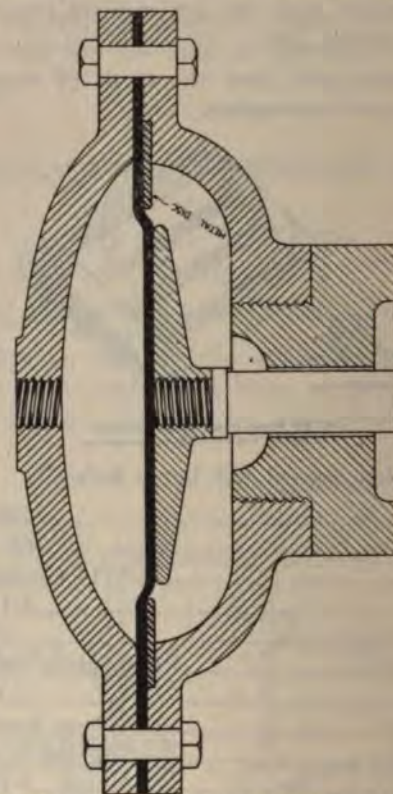
closed. This is a very important feature in using the hoist to raise meter prover.

TO INCREASE OUTLET PRESSURE OF REGULATOR WITHOUT CHANGING THE HEAD

H. P. George, Taft, California

It is sometimes desirable to change the outlet pressure of a regulator when the correct size head is not available. As an emergency measure we have adopted the following:

A recess turned in the lower half of the regulator head in which is fitted a plate of any thickness between $\frac{1}{8}$ " and $\frac{1}{4}$ ". The recess may be about $\frac{3}{4}$ " wide and of such depth as to allow the plate to set flush with the face of the lower flange. This plate may be drilled for any size



TO INCREASE OUTLET PRESSURE OF REGULATOR WITHOUT CHANGING THE HEAD.

circle depending on the desired outlet pressure. The diaphragm gasket is then installed in its natural position and the top half of the head again bolted on.

This serves the same purpose as changing to a smaller head as the area on which the diaphragm is effective is reduced.

The required size of the opening in the plate may be obtained from tables furnished by regulator manufacturers.

Remember this: Character is what a man is in the dark.

METER HOUSE MADE OF WELDED PIPE

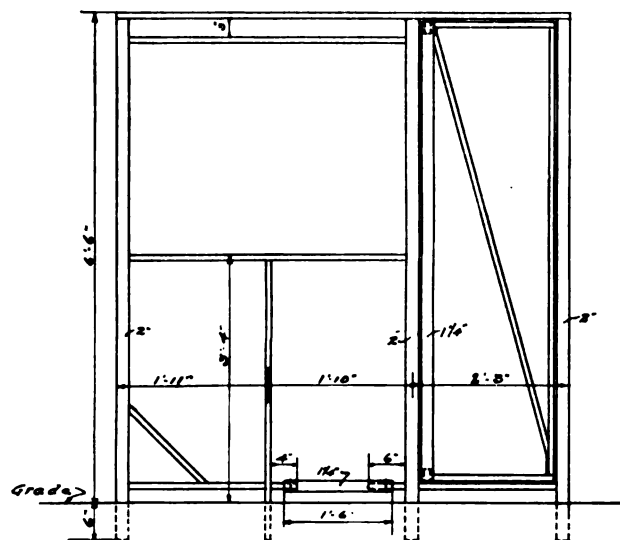
Paul R. Johnson, Independence, Kans.

The drawing shows a welded pipe frame meter house which we have been constructing during the past year. The drawing shows nothing but the layout of the frame to which the iron is attached by special wires which have a head on them similar to a nail and which go through the iron and twist around the pipe.

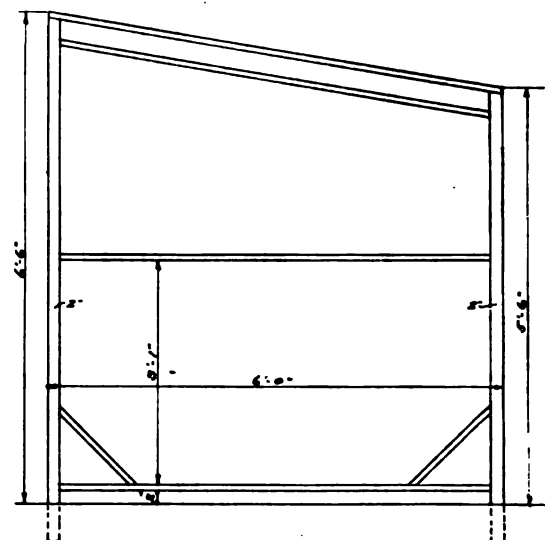
This makes an especially strong and heavy meter house and, of course, is built of junk pipe so that the cost is comparatively low.

You will note in the front elevation a piece seven inches long is cut out of the lower member of the frame and a piece of one and one-fourth inch pipe is made to fit in this place so that the meter house may be set down over an existing meter connection and the same cut-out should be in the rear elevation which, however, does not show in the illustration.

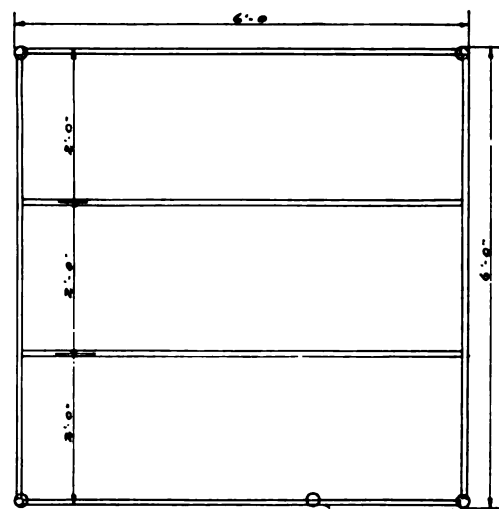
The houses have all been constructed at the warehouse and hauled to the field on a truck and this one sheet of tin both in front and back has been sent out loose so that it could be properly cut to fit closely and neatly around the meter connection.



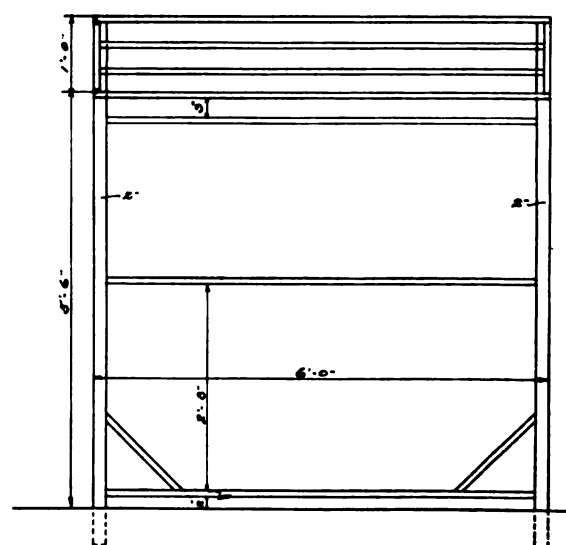
-Front.



-Both Sides.



-Roof Plan.



-Rear.

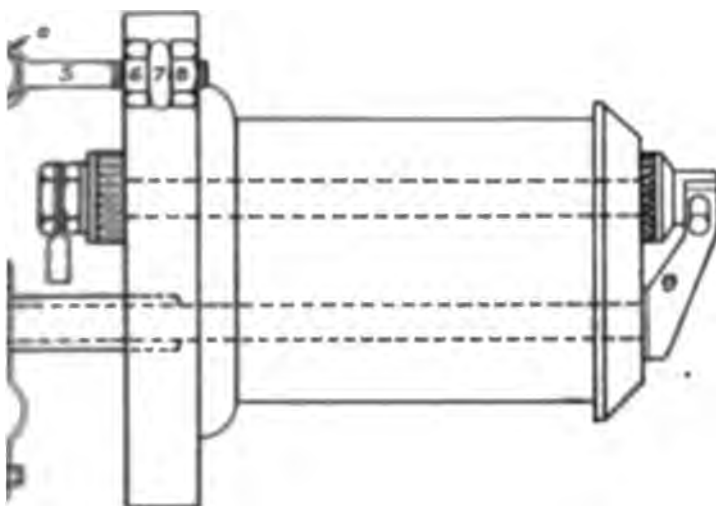
METER HOUSE MADE OF WELDED PIPE.

THE NEVER MISS IGNITER MADE FROM OLD SNOW IGNITER PARTS

M. J. Sears, Supt., Pa.

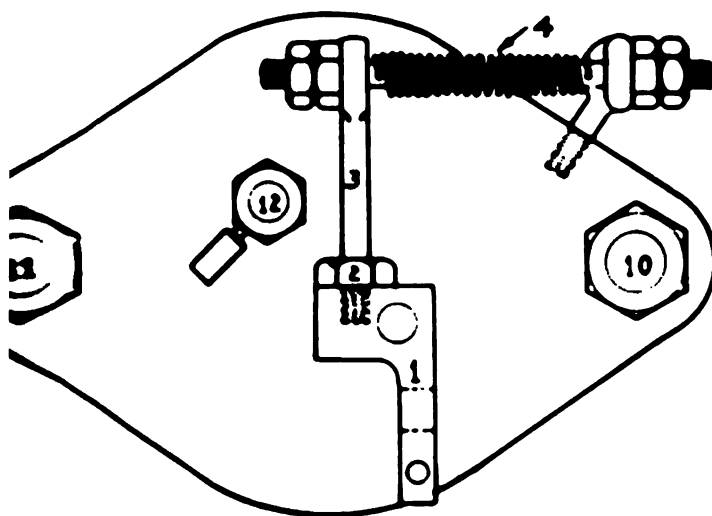
- Part 1—Made of worn out Snow igniter crank
Part 2—Jam or clamp nut clamps movable electrode
crank

VIEW NO. 1.



Side Elevation

VIEW NO. 2.



End Elevation.

THE NEVER MISS IGNITER MADE FROM OLD SNOW IGNITER PARTS

- Part 3—Crank lever
Part 4—Break Spring
Part 5—Eye bolt.
Part 6—Adjusting nut.

- Part 7—Eye bolt screwed in to rim of igniter casting
Part 8—Connecting nut connecting the two cyclads together

- Part 9—Movable electrode

- Part 10—Connecting nut connecting break spring to cyclad

The above is a great improvement on the 10x181 Single Cylinder N. E. Kline Engine Igniter

- Parts 10 and 11—Bolt halves for connecting igniter to cylinder

- Part 12—Stationary Electrode

All parts of the above made of old worn out Snow igniter parts except the break spring

BLENDING NAPHTHA THROUGH A STILL HEAD ON KNOCK-OUT BOX

Henry C. Sears, Supt., Penna., Pa.

The accompanying illustration shows a still head connected to the "knock out" or "expansion" box. Still heads or fractionating towers are designed to secure a maximum separation of the fractions in the distillate and, when used as indicated, should afford the following advantages:

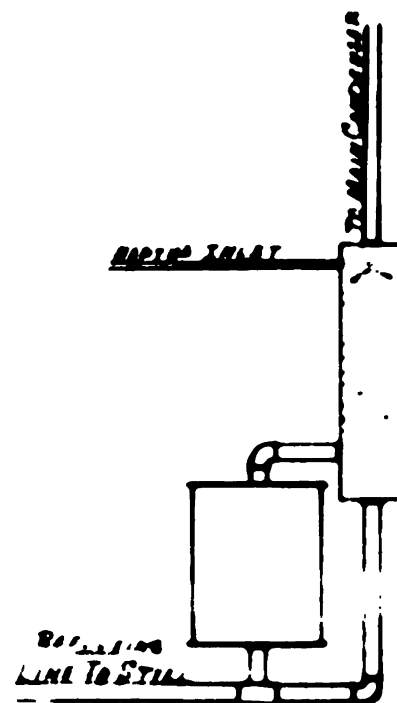


FIGURE 1. BLENDING NAPHTHA THROUGH A STILL HEAD ON KNOCK-OUT BOX

First, the still head will tend to prevent heavy fractions carrying over to the receiver in the still.

Second, it will cause an unstable reaction in the naphtha which will allow it to settle.

Third, the gas line produced will be far less exposed but a blend with a complete chain of leading joints.

AUTOMATIC REGULATOR FOR REDUCING FROM A LOW PRESSURE TO A STILL LOWER PRESSURE

L. S. Wood, Warren, Pa.

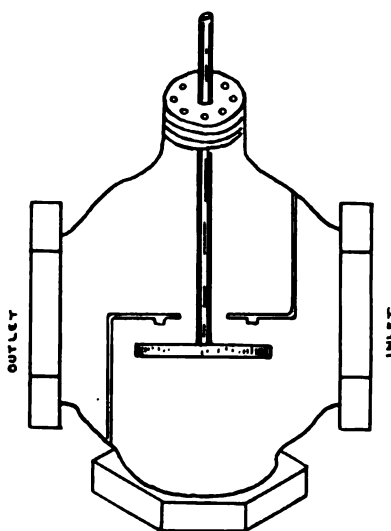
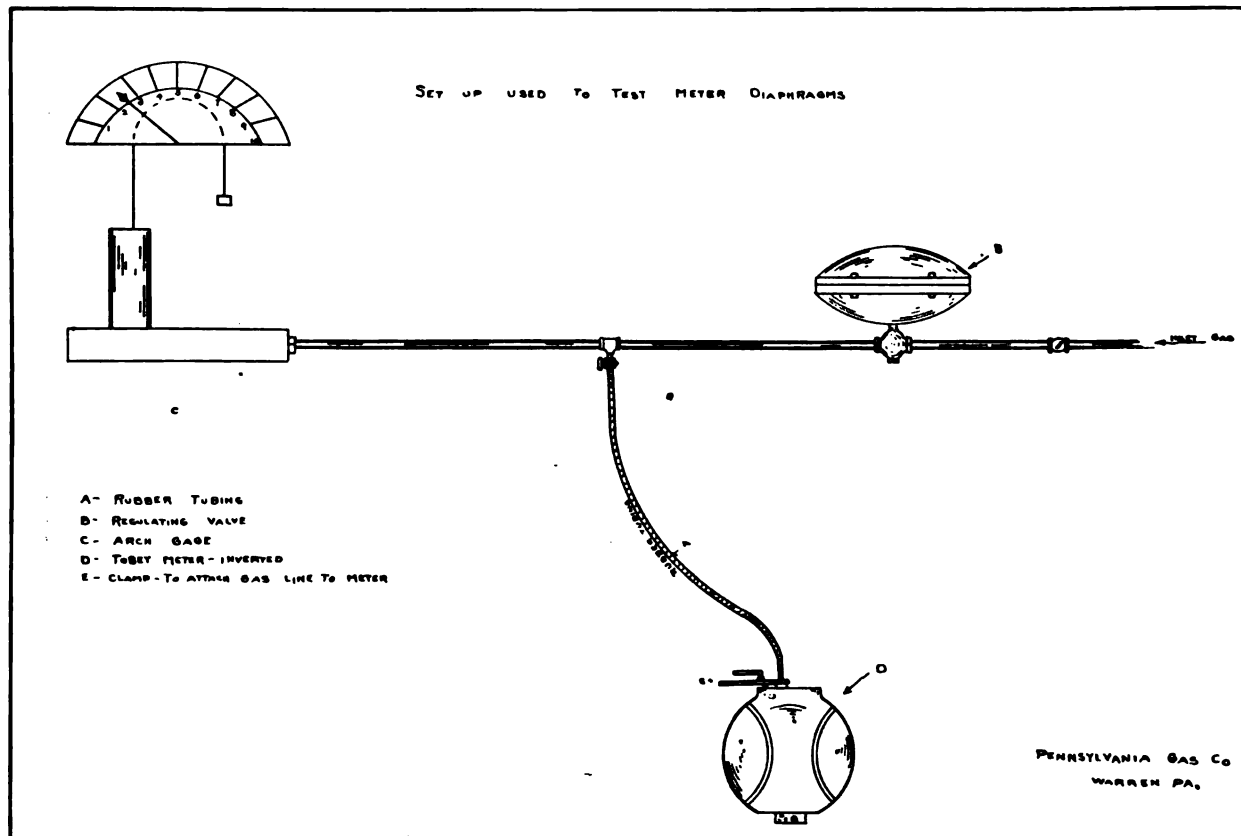
This regulator is made for the purpose as shown in cut for testing out diaphragms in meters.

The idea is to set this regulator to from 1½-inch to 2-inch water pressure. This does away with the repair-

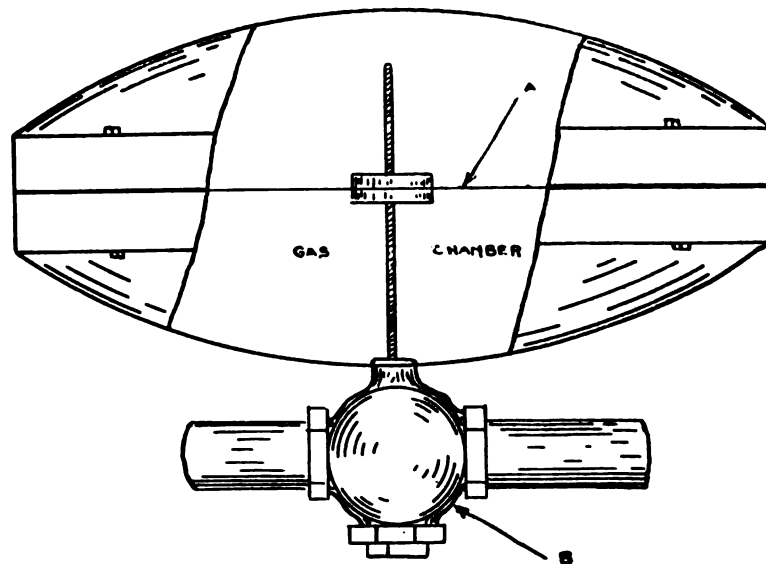
man having to watch the pressure when testing out diaphragms and makes it impossible to put too great a pressure against one side of the diaphragm.

It is of great importance that the best of care be taken not to stretch a diaphragm when testing for leaks. We believe if greater precautions were taken along this line that meters would come back, running nearer 100 per cent.

The sketches show regulator construction and how it is to be connected up and used in conjunction with the Arch gauge.



SPECIAL VALVE



A - RUBBER DIAPHRAGM

B - VALVE

AUTOMATIC REGULATOR FOR REDUCING FROM A LOW PRESSURE TO A STILL LOWER PRESSURE

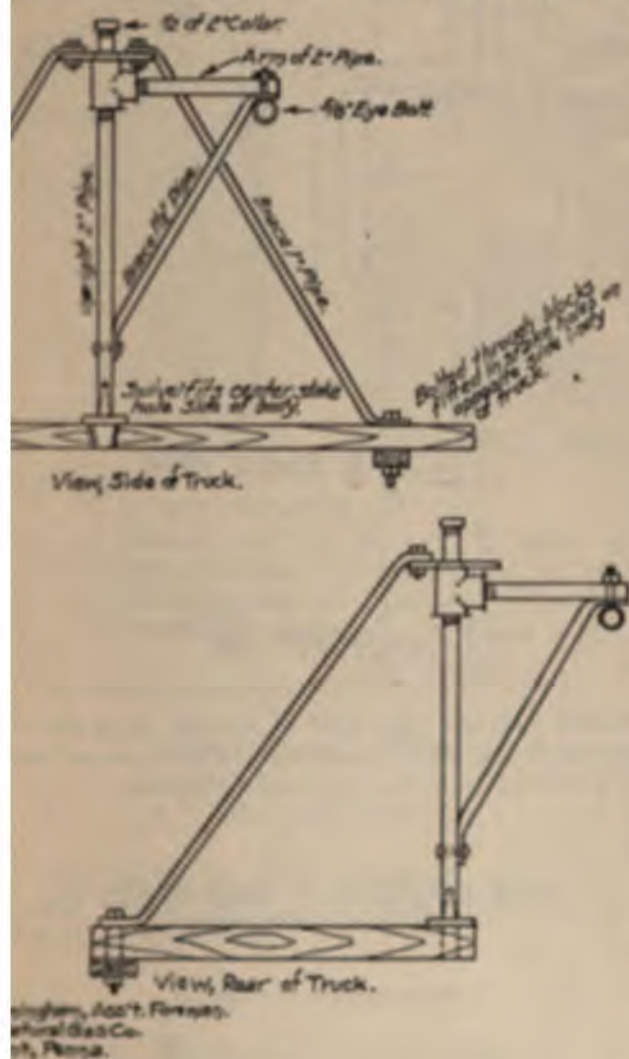
SWIVEL CRANE FOR USE ON TRUCK

M. A. Birmingham, Clermont, Pa.

The photograph and sketch show a swivel crane for lifting heavy material on trucks.

A satisfactory swivel or swinging crane can be made from 2-inch and 1-inch pipe, to which we attach a small set of chain blocks for facilitating the loading of any

SWIVEL CRANE FOR USE ON TRUCK.



material up to 1,000 pounds in weight. One man easily lifts barrels of oil, small gas engines and rig timbers without the aid of a helper.

The crane is set on a swivel which fits into a center hole on the side of the truck body. On top of upright 2-inch pipe we have a loose ring to which bolted two 1-inch pipe braces which bolt into wooden blocks which fit the stake holes on the opposite side of the truck body. The arm of the crane is 3 feet of 1-inch pipe with a pipe brace made from 1 1/2-inch pipe.

A 1/2-inch eye bolt permits the chain blocks to be suspended from same. The crane will give 3 feet of loading clearance on side and above truck body. The



SWIVEL CRANE FOR USE ON TRUCK.

crane can be set up in 5 minutes by one man. This crane is very convenient for loading timbers on a trailer, as the driver can back the truck alongside the trailer and load it first and then drive ahead and load the other end of the timber on the truck.

A SATISFACTORY WAY FOR ROUTING TICKETS AND POSTING FAULTY ONES

E. S. Chutkan, Fort Worth, Texas

We number gas card stubs with a numbering machine. Our ledgers have an average of 800 accounts each. Suppose we are sending out ledger 8—the machine is set at 8,000. The first figure, 8, stands for ledger eight, and we number stubs from 8,001 through to the end of the ledger. Tickets can be routed by number much faster than under the customary folio and line system of routing.

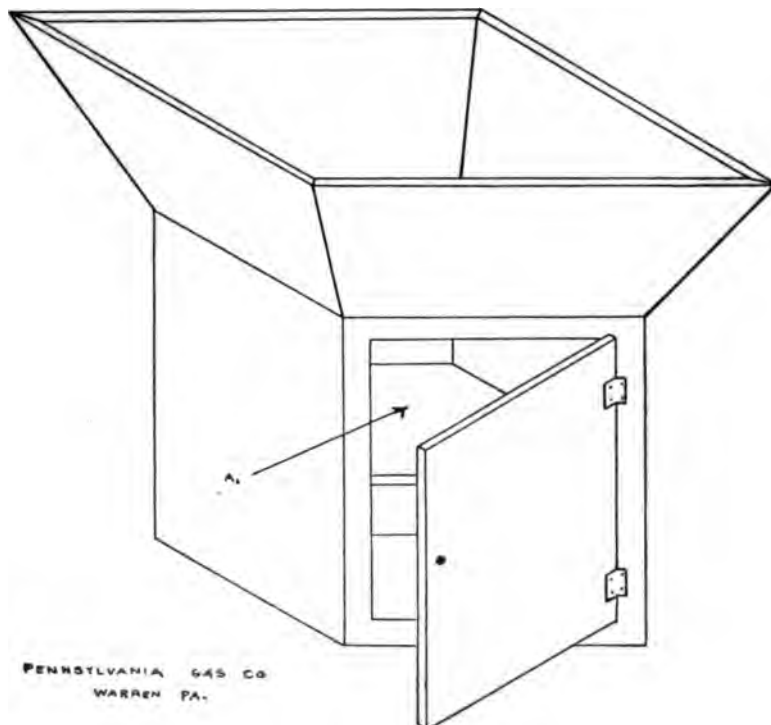
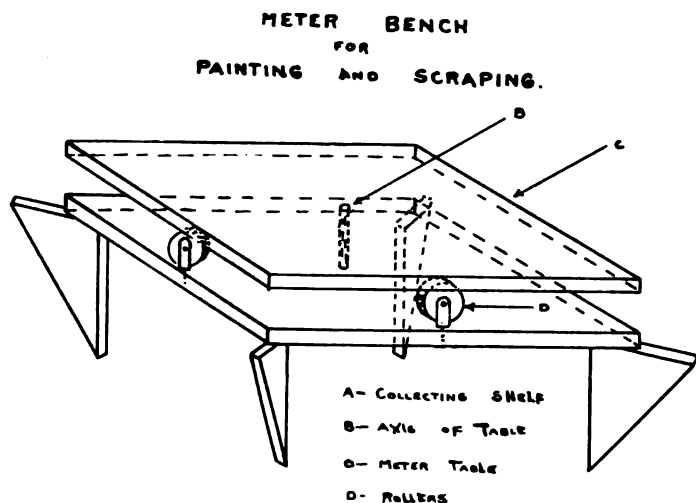
Then take the case of faulty stencils, resulting in failure to find the proper account to credit the payment. Suppose this faulty ticket is number 8,345; we turn to the closest number paid that day, which, we will suppose, is 8,322. By locating this account in the ledger and turning 23 accounts, we have the account where 8,345 should be posted. If it is still doubtful, we can take a ticket on the other side, say 8,352, and count seven backwards from it, and if this count falls on the same sheet as before, we know that is where the payment should be credited.

Distribution can be made less expensive by the proper use of advertising

METER BENCH USED FOR CLEANING AND PAINTING METERS

H. P. Shawkey, Warren, Pa.

You will find this a very handy and convenient paint bench, as the top where meter sets rotate, doing away with having to turn the meter by hand in order to paint

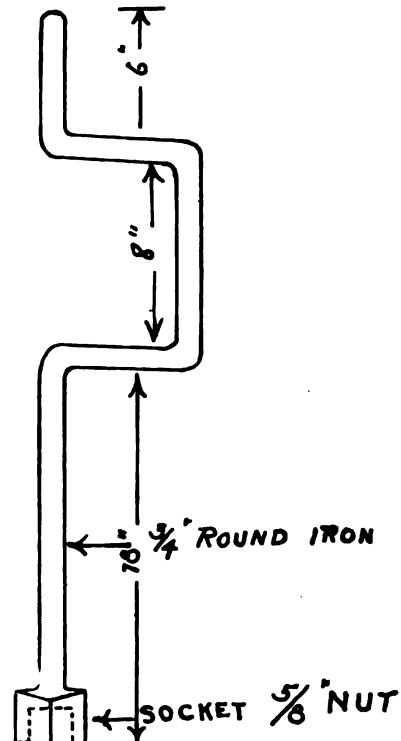


on all sides of the meter. In cleaning the meter it catches all the rust and dirt instead of having it all over the floor. The base can be used for keeping paint brushes, etc.

HANDY TOOL TO USE IN INSTALLING SADDLES

Jas. P. Strickler, Columbus, Ohio

This illustration features a simple and handy tool to use in installing saddles. We find it a great time saver, as a saddle can be tightened up with it in less than half



HANDY TOOL TO USE IN INSTALLING SADDLES.

the time with any other kind of wrench. It is also very convenient for putting saddles on in close places—something learned from the Automobile Mechanic.

MARK LOCATION OF STOP BOXES IN FIRE ALARM BOOK

Charles DeWeese, Louisville, Ky.

We are adopting a wrinkle here for the benefit of our complaint department by making a memorandum in our fire alarm book giving location of stop boxes; i. e., where box numbers are for some specified building, such as

362	Location of Stop Box
On Chest St	97'E of center of Main Entrance
	1' N of N Curb

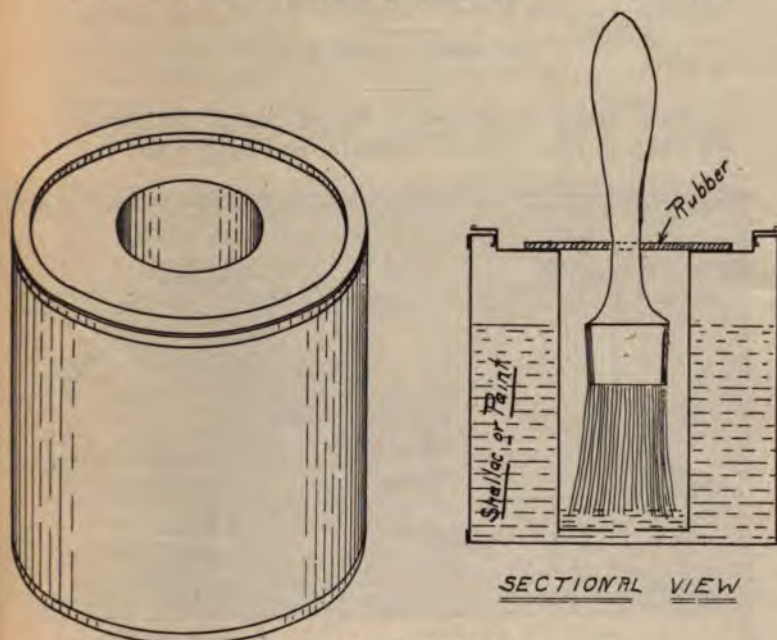
factories, theaters, hospitals, etc. For instance: Box 362, City Hospital Service Box on Chestnut Street 97 feet east of center of main entrance, one foot north of north curb.

Competition automatically weeds out the incompetents and rewards the hustlers

PAINT AND SHELLAC CAN

A. M. Bethard, Columbus, Ohio

In connection with meter repair work, where it is necessary to keep a can containing paint or shellac on a work bench, where it is liable to be overturned, the can shown in the accompanying sketch is both con-



PAINT AND SHELLAC CAN.

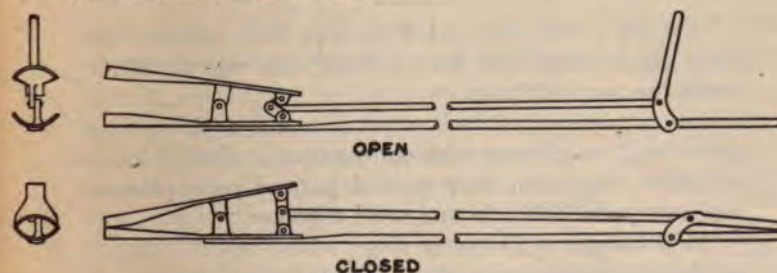
venient and profitable, in that the paint or shellac is prevented from evaporating excessively, and a very small quantity is lost in case the container is overturned.

The sketch is self-explanatory, and needs no further information.

CURB BOX CLEANER

H. F. Tragressor, Dennison, O.

The curb box cleaner should be made of steel or malleable iron, leaving handles of sufficient length to reach the bottom of curb box.



CURB BOX CLEANER

H. F. TRAGRESSOR
THE EAST OHIO GAS CO.
DENNISON, OHIO.

It is an effective method of removing dirt and other substances from the inside of curb boxes.

SHOP RECORD OF METERS

L. W. Cole, Dallas, Texas

This form is for the purpose of keeping a record of all meters coming into and going out of warehouse, also keeping a record of meter when received in warehouse and after adjustment, as well as a record of repairs made on each meter.

When meters are received in warehouse, one of these cards should be written up covering each meter, showing number, kind, size, date brought into shop, and reading. When the meter is tested, it should show record of test when received in the warehouse, and, when adjustment is made, it should show a record of test after adjustment. The front of this form reads as follows:

SHOP RECORD OF METERS

No..... Kind..... Size.....
 Into Shop.....19..... State.....
 Out of Shop.....19..... State.....
 Test Slip No..... In Fast.....% In Slow.....%
 After Adjusting..... Fast.....% Slow.....%
 Repairs
 Remarks

(Over)

On the back of this form instructions are issued regarding the handling. It will be noted that a space is provided for per cent fast, or slow, in each case. Under "repairs" should be a record of all repairs made to meters, and under "remarks" any further items of interest, after all proper entries have been made on the card. When a meter goes out of warehouse, either to plant or shipped to some other town, the card should be taken from the index file, where it has been placed in "In Warehouse" file, and date of the meter going out of the shop recorded on the card; also the state. The card is then placed in the file covering meters that have passed from the warehouse.

A record is then had of all meters in warehouse, also of all meters which have passed through the warehouse.

TO PREVENT TOOLS FROM RUSTING

Chas. E. Goble, Shippensburg, Pa.

Boiled linseed oil will prevent tools from rusting, if it is allowed to dry on them. Sperm oil will also prevent tools from rusting for a short time. A coat of Copol varnish is frequently applied to polished tools that are exposed to the weather.

Vaseline is also used with success, but is not commonly used on account of it greasing any article that might come in contact with it.

Labor is the arm which feeds and clothes the world, and capital is the life-blood which keeps that arm alive

WATER PROOF GLUE

P. W. Black, Shippensville, Pa.

Use one art India rubber and three parts of gum shellac.

Dissolve each in ether, using separate vessels, and under a mild heat. After it has become completely dissolved, mix the two and keep in an air tight vessel.

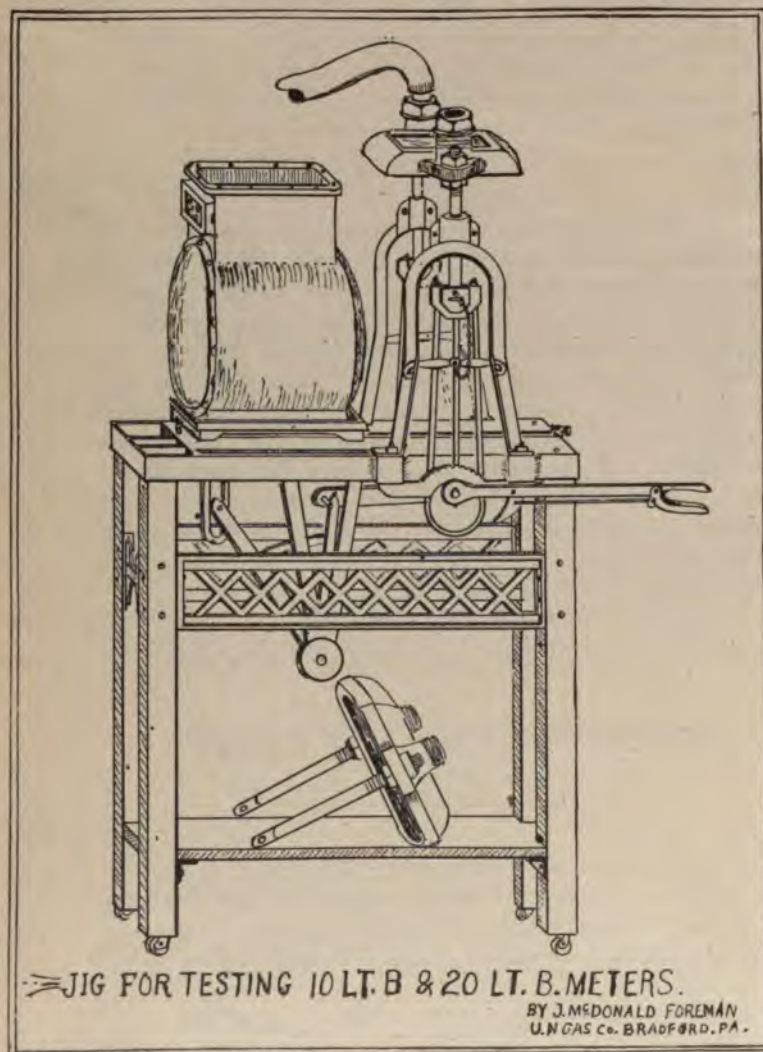
This mixture will stand both hot and cold water and nearly all kinds of acid.

TESTING JIG FOR TEN AND TWENTY LIGHT METERS

John McDonald, Bradford, Pa.

The accompanying illustration shows a machine that was designed for attaching testing jig to ten light B and twenty light B iron-case meters when testing these meters on meter prover.

Set the meter on the carriage and one pull of the lever will cause the meter to slide on the carriage $9\frac{1}{2}$

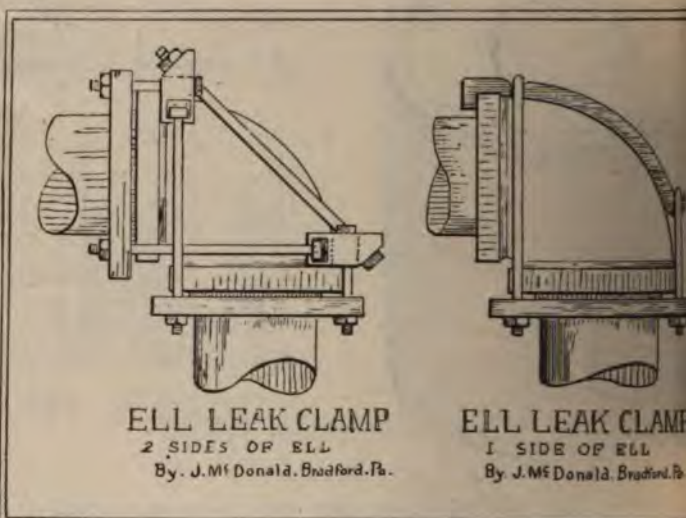


inches and at the same time clamp the proving jig down on top of the meter. As the meter prover hose is left attached to the proving jig permanently, the meter is now ready to test. When through testing, one throw of lever will release the proving jig and move meter out from under jig for operator to test.

ELL LEAK CLAMP

John McDonald, Bradford, Pa.

Above sketch shows two styles of clamps for repairing leaks on ells. Dresser converse end flanges and rub-



bers are used to stop leak as you would on a collar. My attachment is for holding the bolts to pull the flange in position to stop leak.

Left hand cut shows method of repairing leaks on both sides of ells, while the right hand cut shows clamp used when leak is only on one side of ell.

METHOD OF REPAIRING A BROKEN WELD ON A 12-INCH LOW PRESSURE MAIN

J. P. Laughlin, Akron, Ohio

First dig a bell hole and wrap leak with friction tape. Then dig a second bell hole, leaving one foot of dirt between the two bell holes.

Use one set of 12-inch, steel, Dresser couplings, cut center ring and flanges with cutting torch. Spread halves of center ring to fit over welded part of pipe, place on pipe in second bell hole and weld together.

Weld flanges to fit center ring.

Dig out wall between the two bell holes, and slide fitting over broken weld. Cut one set of 12-inch, lead-tipped, dresser rubbers and place under center ring, and drive in with a corking tool.

Take one set of 12-inch, square, collar-leak, clamp rubbers, and place on pipe behind lead-tipped rubbers.

Bolt fitting up, and you have a perfectly tight joint.

The habits you form count for more than the resolutions you make, because habit is a living resolution

COMBINED ORIFICE AND POSITIVE METER STATION

M. E. Vance and T. H. Kerr, Columbus, Ohio

In measuring gas to industries where the week-end load is very small compared with the load carried during the week, this combination station has been adopted. It consists of a positive meter which operates as a meter having orifice constriction in the line to control the operation of a rolling weight type differential valve, similar to the Emco pattern, which opens to permit



COMBINED ORIFICE AND POSITIVE METER STATION.

the orifice meter to come into service when the large consumption of full plant operation begins, and closes, leaving the week-end load entirely on the positive meter at the end of the operating week. This arrangement is particularly adapted to glass plant metering. The Emco differential valve is best suited to this purpose, because of the extreme wide range between opening and closing pressures.

GAUGE USED IN REGULATING TIN METERS

G. C. Tucker, Youngstown, O.

This gauge was made up of old meter parts. The body is an old No. 1 Tobey valve cover. It is adjustable to the different size meters from five-light up and used when regulating meters after repairs have been made. In use, it is set on top of the valve box, and the hand on the small dial of the index has been brought to the usual starting point, the pointer screw of the gauge is placed directly over the tangent wrist of the prover started. When the Dial hand has made its revolution, stop the prover when tangent wrist is again directly over the pointer screw. This insures greater accuracy in regulating than is the case where the dial hand is read on entirely.

men rarely complain; they spend their time correcting errors, not bewailing them.—Vulcan Bulletin.

CENTERING DEVICE FOR 10 LT. B. METERS

John McDonald, Bradford, Pa.

The tool illustrated was designed in order that the exact center of the crank in 10 light B meters could be found, so that the crank stand bar will align true with the crank and not be staggered and leave a friction on some other part of the meter workings.



CENTERING DEVICE FOR 10-LB. B. METERS.

The pin points on the tool meshes in the cover bolt holes of the meter, and after careful calibration the center point will be found.

A center pin will be found on the tool, which is poised on a spring, for thumb movement.

LETTER STAMPING TOOL

John McDonald, Bradford, Pa.

The tool illustrated was designed for use in stamping any information on brass tags.



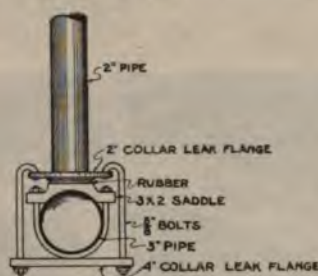
LETTER STAMPING TOOL.

The machine is constructed of heavy iron plate with tee heads affixed. Two-inch parallel bars are installed for use as a guide for the head which slides on same. The bar is graduated as a spacer and the head is secured to this by a dog which is released by merely pressing, when the head has to be shifted.

REPAIRS FOR SADDLE TEST

W. M. Keenan, Youngstown, Ohio

A leak in threads at saddles may be quickly stopped by using one collar leak flange and rubber at threads and



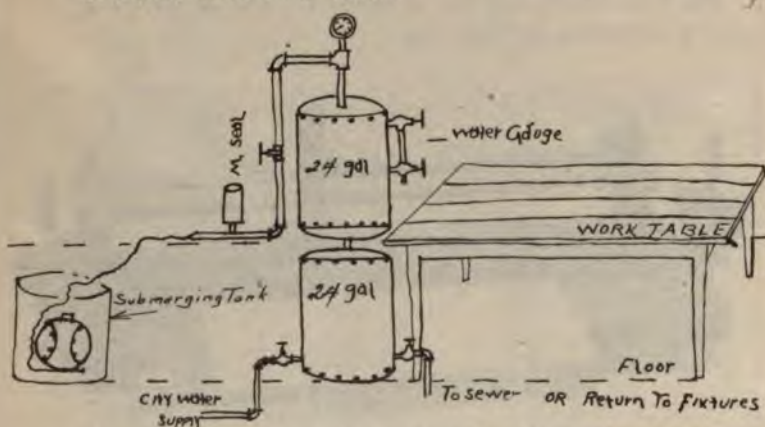
REPAIRS FOR SADDLE LEAK
W. M. KEENAN THE EAST OHIO GAS CO. YOUNGSTOWN, OHIO

a larger collar leak flange behind main on which saddle is placed, drawing same up with $\frac{5}{8}$ " bolts as the illustration shows.

TO GET COMPRESSED AIR BY USING CITY WATER PRESSURE

John Lebew, Mt. Vernon, Ohio

This arrangement was adopted as a safe means of two tanks connected to city water supply. The water is used as a means of compressing the air in the tanks for the purpose of supplying air pressure for testing domestic meters for leaks.



USING CITY WATER PRESSURE TO GET COMPRESSED AIR.

This arrangement was adopted as a safe means of obtaining compressed air where other means were not obtainable. One filling of these tanks in the morning is sufficient to furnish air for a full day's testing. In the evening the water outlet to drain is opened and in the morning the tanks are empty and ready to fill for another day's work.

The man who can control himself has little trouble overcoming obstacles.—Vulcan Bulletin.

CLEANING TANK FOR METER SHOP

J. E. Colvin, Muncie, Ind.

The accompanying sketch shows a very satisfactory and efficient method of removing dirt and paint from old meters.

The tank used is divided into two sections, each section holding about 200 gallons of water. In the cleansing compartment a solution of water and Oak-ite is used and in the other compartment clear water for rinsing purposes.

The fire for heating this tank is provided by the use of a motor driven blower, the gas being mixed with air at the blower, the burner nozzle being located within several inches of 4-inch pipe opening at the bottom of the tank. This 4-inch pipe is on the bottom of the tank running along one end and at the back and finally is carried up and into a flue where the products of combustion are discharged. The heat carried through this pipe is quickly transferred into the water surrounding it and very little heat is lost up the flue.

With this installation we are able to bring the temperature of the water in the tank up to 175° to 190° F. in an hour, using natural gas as fuel.

The meters to be cleaned are first dipped in the cleansing solution which quickly removes all dirt and paint, and then dipped in the rinsing compartment and are then ready for a new coat of paint.

OFFICE RECORD OF PAVING AND SIDEWALK REPAIRS

Wm. Dahler, Cleveland, Ohio

The accompanying form is to be filled out by the time-keeper or foreman when sidewalks or paving are disturbed, and filed at shop office.

LOCATION	STONE	BRICK	ASPHALT	FLAGGING	CHARGE
SAND BASE					
CEMENT OR TAR FILLER					
CONCRETE BASE					
CEMENT OR TAR FILLER					
STONE					
CEMENT					
MATERIAL USED	QUANTITY	LABOR	HOURS		
CEMENT		FOREMAN			PERMIT NO.
STONE		FITTERS			WORK ORDER NO.
SAND		TAPPERS			SERVICE ORDER NO.
WATER		LABORERS			CONST. ORDER NO.
		TRUCK			
		INSPECTOR			FOREMAN
DATE STARTED					
DATE COMPLETED					

OFFICE RECORD OF OPENINGS IN PAVEMENT AND BROKEN SIDEWALKS
W. DAHLER THE EAST OHIO GAS CO. CLEVELAND, OHIO

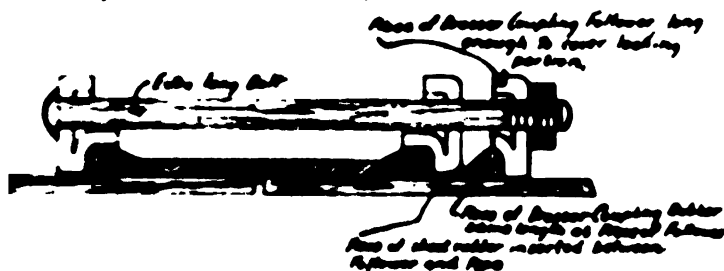
When repairs are to be made, the form is turned over to the repair gang and on completion of the repairs is properly filled out and filed as a permanent record.

TO STOP LEAKS IN DRESSER COUPLING CONNECTION

J. E. Beewell, Dallas, Texas

I submit a method of stopping leaks in rubber joint couplings where pulling up on the coupling bolts will not do the work.

A piece of ordinary Dresser follower is cut to sufficient length to cover the leaking portion of the coupling in use, which may be either two bolt holes, three bolt holes, or four bolt holes in length. About half of the lip on this piece of follower which holds the rubber in place is then ripped off so as to allow plenty of room to pull up on the rubber. A regular Dresser rubber is then cut to the same length as the piece of follower which is being used, and by using extra length bolts the leak may be repaired in the following manner.



STOP LEAKS IN DRESSER COUPLING CONNECTION

The necessary bolts are removed from the leaking coupling and the piece of Dresser rubber to be used is inserted directly behind the follower and over that portion of the coupling in which the leak occurs. At each end of the length of this piece of Dresser rubber a small amount of thin sheet rubber is inserted, which will serve as a packing to caulk the ends. The piece of follower is then placed in position on the outside and extra length bolts used through the coupling, and also the piece of follower, which when tightened will pull the additional rubber up tight behind the old follower and stop the leak. In other words, this piece of follower and rubber may be used in the same manner as an O'Leary clamp, and with the same effect except where the rubber leak is over too large a portion of the coupling to allow a repair of this kind to be made. The followers for this method can be cut and the lip ripped off in any machine shop at a very nominal cost. This saves the expense of either a coupling leak clamp or of draining the line and installing new rubbers.

CUSHION CHECK VALVE

H. E. Bostine, Sagat, Pa.

Check valve with vertical valve movement may be used in high speed compressing without destruction to valve by placing a vertical spring between valve and check valve cap, cutting down into valve so as to get as many coils of spring as possible. Spring smaller than valve guide should be used so as not to cut away outside of the guide.

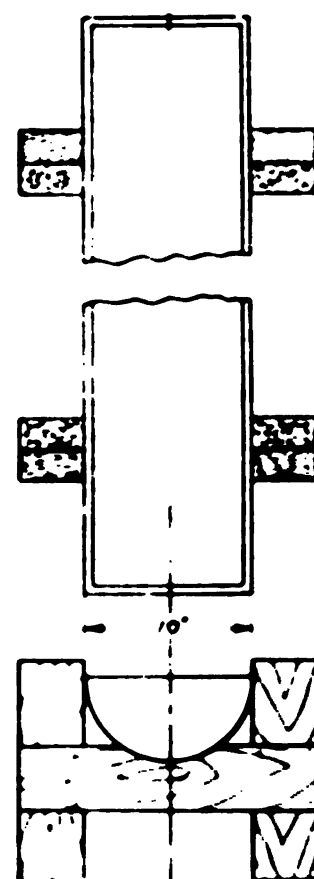
DIPPING TANK OR TROUGH FOR STEEL PIPE—MADE OF 8-INCH PIPE OR LARGER

W. A. Hines, Clearmont, Pa.

A dipping tank, or trough, is easily made from 8 inch pipe or larger, as illustrated by sketch.

The one that we are using at the present time is made of 8 inch or 10 inch pipe welded, so as to give us 40 feet in length. A short 15 foot joint was split in two and the ends welded. A set of arms made to fit the circle of pipe permits the pipe to be rolled, raised

DIPPING TANK OR TROUGH, MADE OF 8" OR LARGER PIPE



W. A. Hines, Clearmont, Pa.
Copyrighted Material, Gas Co.
Clearmont, Pa.

or lowered by the means of levers shown. The circular arms in the trough rotate rollers which allow the pipe to be easily rolled with one side of the pipe immersed in the oil bath. This results in saving oil and as the pipe has been turned over, regardless of its size, it is completely oiled inside and out, and then the lever is lowered which raises the pipe out of the oil and permits the surplus oil to drain off before the next is placed on the pipe. This method is made portable so that it can be moved to the various pipe piles in the field.

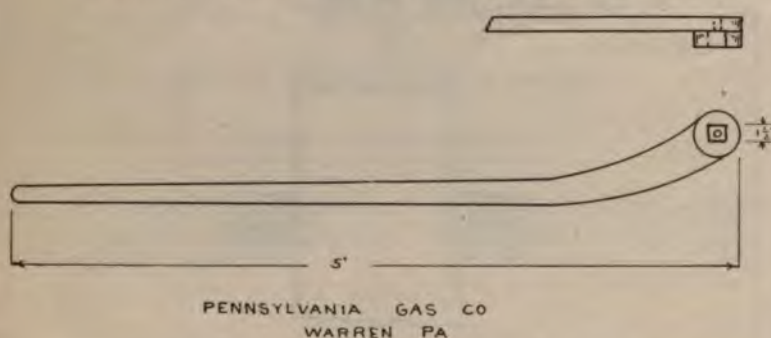
The hardest difficulties to overcome usually lie within ourselves.—Vulcan Bulletin.

NUT CRACKER FOR REMOVING BOLTS FROM PLAIN END PIPE COUPLINGS, ILLUSTRATED

H. W. Breneman, Warran, Pa.

This tool is made from an ordinary crow-bar with piece welded on to the side at end of bar with socket made to fit nut to be removed, and with hole drilled to fit bolt that nut is on by placing this tool on the end of

NUT CRACKER FOR REMOVING BOLTS FROM PLAIN END PIPE COUPLING



bolt and nut. By moving end of bar backward and forward two or three times, the end of bolt and nut is easily removed. We find this saves a great deal of time and labor in repairing all kinds of plain end pipe couplings; also removing old collar leak clamps.

TOOL FOR SETTING DIAPHRAGMS IN 10 LIGHT B METERS

John McDonald, Bradford, Pa.

The illustration shows the screw driver provided with a shield, which is placed far enough from the end of the tool that it will allow the disc screw to enter the casing and provide play enough for the screw to be tightened. A man who has placed diaphragms will appreciate this tool.



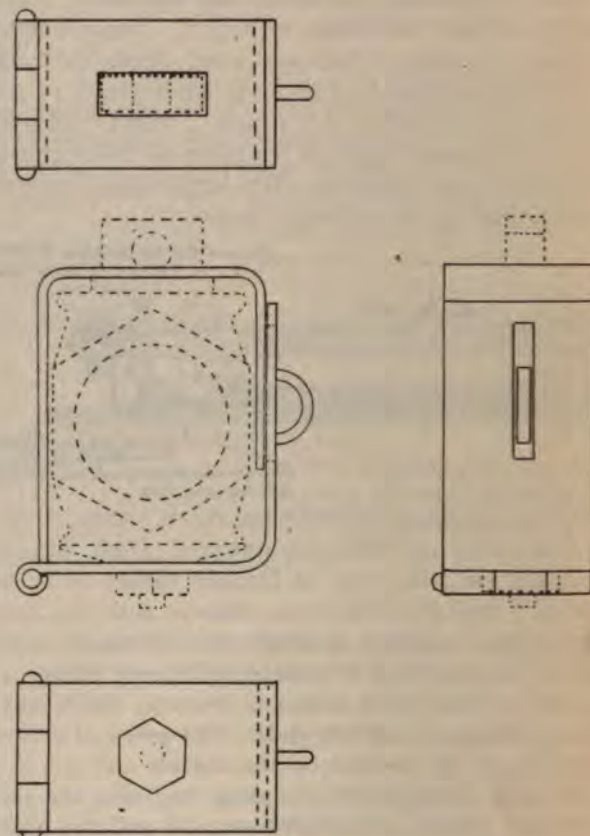
TOOL FOR SETTING DIAPHRAGMS IN 10 LIGHT B METERS.

To operate, hold the disc and screw on the diaphragm and insert the screw driver through the hole in the disc, then tighten the screws on the shoulder to the disc. Next place your paper washer, oil and shellac and you are ready to go ahead and quickly set the diaphragm.

LOCK FOR STOP COCK

Clyde Hudkins, Bellaire, Ohio

This is a very simple and inexpensive lock or clamp, designed for use on meter stop cocks. It can be used



LOCK FOR STOP COCK

CLYDE HUDKINS, FITTER
BELLAIRE OHIO
THE MANUFACTURERS LIGHT & HEAT CO.

DISTRIBUTION

on any style of flat-head or square-head meter stop cock, thus doing away with the necessity of installing special lock stop cocks on meter manifold.

TO CUT A WIDE SLOT WITH A HACK SAW

Floyd Black, Shippensville, Pa.

When it is found necessary to cut a slot wider than the thickness of a hack saw blade, one cut can be made by using two or three blades in the hack saw frame, as if one blade were used in the frame, several cuts would be necessary.

Every shadow bears proof that there is light.—Vulcan Bulletin.

THE BIG FIVE
"KNOW YOUR PRODUCT"

ATLANTIC CITY. NEW JERSEY
OCTOBER 23 TO 27. 1922
BOOTHS 131 AND 144

HEAT WATER WITH GAS

The Big Five

*The Ruud Educational Exhibit, the Foremost Presentation of
Water Heater Fundamentals to be seen at Atlantic City*

- I Ruud Battleship Mechanism.
- II Ruud Automatic Moment-Valve Controlled
Storage System.
- III Ruud Automatic Water Heater Skeleton.
(Instantaneous Type)
- IV Ruud Tank Heater.
(Analysis of Construction)
- V Ruud Automatic Water Heater Skeleton.
(Instantaneous Cottage Type)

“Heat water with gas.”

That is the imperative action for 1923.

The automatic gas water heater is ranking first in the selling program of every forward-thinking gas company.

The automatic water heater market is greatly undersold. Its sales possibilities are enormous.

Replacement selling is at a minimum. Every sale is an increased outlet for gas.

Automatic water heater business for 1923 will dwarf previous records for two reasons.

1. Organized selling effort will capture the unsold market.
2. The automatic water heater is the logical instrument to increase the sale of gas.

HEAT WATER WITH GAS

The Big Five—a Tabloid, yet Complete Water Heater Education

To sell more gas water heaters, know your product.

The Ruud Educational Exhibit is the first in four years to be shown under complete operating conditions.

Here, with the apparatus functioning before you, you can absorb a complete water heater education so that you will be able to know thoroughly the basic principles of water heater construction.

The exhibit will be as interestingly instructive as a trip to the factory.

It will give you a greater water heater understanding; it will prepare you for a water heater selling that will eclipse anything in the past.

The Big Five—the First Full Working Exhibit in Four Years

I

Ruud Battleship Mechanism (Instantaneous Type)

Built in a size which if adapted to a water heater would provide 100 gallons per minute capacity. The smallest detail of construction is clearly shown.

II

Ruud Automatic Moment-Valve Controlled Storage System

A complete working exhibit—under water and gas—demonstrating the positive and accurate control of gas at one minute intervals.

III

Ruud Automatic Water Heater Skeleton (Instantaneous Type)

In complete operation under water and gas showing every detail as it functions. Every working part can be seen as it operates.

HEAT WATER WITH GAS

IV

Ruud Tank Heater

(Analysis of Construction)

Showing the complete cycle of manufacture from the first piece to the finished heater. An instructive demonstration of superior tank heater construction and assembly.

V

Ruud Automatic Water Heater Skeleton

(Instantaneous Cottage Type)

A skeleton under full gas and water pressure, functioning normally but with every part in full vision, demonstrating the superiority of Ruud design and construction.

To sell more water heaters, understand water heaters—thoroughly.

The Ruud Educational Exhibit offers you a close-up view of automatic water heater design and construction; it makes easy an intelligent comparison of water heater values; it offers you a tangible, definite value in return for your time.

Twenty-five years of intensive effort have perfected the Ruud Automatic Water Heater and the organization that makes it. It is a proved appliance.

With all emphasis, we caution that you let nothing interfere with your visit to this, the first and only presentation of water heater fundamentals in a graphic and easily understandable form.

Ruud Manufacturing Company

Atlantic City, New Jersey

Booths 131 and 144

WHY not judge the tank heaters you buy, by the same standards that govern purchases for your personal use?

Do you buy clothes because they are cheap or because they are good?

Were the appliances in your home selected because their price was low or because their value was great?

Low price in a tank heater means low-priced "cheap," material; such a product commands a low price because of "hurry-up" manufacturing methods, a fluctuating and unstable merchandising policy.

"Grief" follows in the trail of the man who buys it and the man who sells it.

Value in a tank heater means a long, efficient, trouble-free life; minimum installation and maintenance costs; a sound manufacturing and sales policy.

Satisfaction and long-distance profit follow in the trail of the man who buys it and the man who sells it.

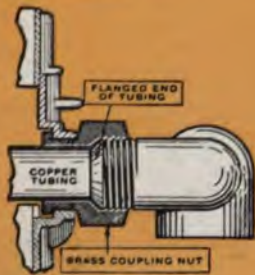
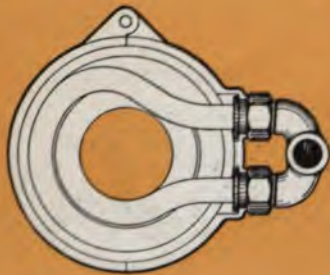
FOR long-distance profit, standardize with Ruud, the Quality Tank Heater, designed on sound engineering principles, manufactured honestly and carefully and sold by a nationwide organization that is always on the ground to give personal service.

Ruud has spared no detail to produce a superior tank heater—one that we, as manufacturers, believe to be the best and one that you can sell with complete confidence.

Standardize with Ruud, the tank heater of time-enduring value. Its Quality has made it the fastest selling tank heater today.

Make a "test order" of three or six today.

RUUD MANUFACTURING CO.
Pittsburgh, Pa.



Quick Detachable Top

Brass Interchangeable and Reversible Manifolds with Union Nuts. Heater Swings on an Axis

Pressed Steel Spring Coil Lock; No Pins, Screws or Locknuts

Quick Detachable Base

Full Size Brass Gas Cock, Straight or Adjustable



Ruud Tank Heater



Double Coil, Wound with
Reverse Grades. Inside Coil
Tapered

Cast Iron Flame Spreader

Gravity Door Latch

Burner is Machined to Fit
Mixer. No Cotter Pins,
Screws, etc. Holes are
Evenly Spaced

Mixer, Offset Friction Lock
to Base

Cast Iron Adjustable
Shutter

riority at a Glance





Ruud Duplex Tank Heater Display Fixture

TO SELL more Ruud Tank Heaters, put them where more people will see them.

Display them attractively; place them in the line of vision of everyone entering your salesrooms.

The Ruud Duplex Display Fixture puts your tank heaters right in "line of fire," giving them the prominence that is necessary to increased sales, and yet taking up but little floor space.

ITS SPECIFICATIONS

Cast iron base with finish of white japan.

Center post of heavy, oxidized, seamless steel tubing.

Upper and lower heater brackets of cast iron with adjusting screws. Finished in white japan.

Display card frame and bracket of brass, beautifully nickel-plated and highly polished.

Complete with one standard Ruud No. 25 Tank Heater (black japan finish) and one standard Ruud No. 25 Tank Heater (gray porcelain enamel finish).

You can add this extra and permanent salesman to your force at little cost. It will repay you in increased interest and sales in tank heaters. Write for prices today.

**Ruud
Manufacturing Co.
Pittsburgh, Pa.**

WEAR WELL

MERCURY CHROME VALVE CUPS

MADE IN DETROIT, MICH.



"THE BEST CUP"
Green in Color

"WEAR WELL MERCURY CHROME VALVE CUPS" have been used successfully for many years. They are made to dimensions, fit the barrel of the valve and "snug" the seat ring. They increase your production and decrease your expense. Order them today.



OAK VALVE CUPS



"BETTER THAN THE COMMON CUP"
DARK BROWN IN COLOR

"H. G. P. OAK VALVE CUPS" are made from a high quality of Oak leather selected and treated for Oil Well Service. Finest Oak Tanned, perfect fitting Valve Cup that is sold at a price consistent with quality. Order for samples today.

Horace G. Preston Company

ESTABLISHED 1888

PITTSBURGH OFFICE, 403-404 APOLLO BLDG.
PITTSBURGH, PA.

Tepco

PORCELAIN ENAMELED STOVE PARTS

...QUALITY FIRST...

The Enamel Products Company.
CLEVELAND, O.

COMPANY MEMBER OF AMERICAN GAS ASSOCIATION

HUNTLEY & HUNTLEY

*Petroleum Geologists
and
Engineers*

L. G. HUNTLEY

STIRLING HUNTLEY

FRICK BLDG.

PITTSBURGH, PA.

For Quick Turnover

JOHNSON HOT PLATES and
LAUNDRY STOVES



NO. 12 TWO BURNER

These Stoves are proving a big sales stimulus with Gas Companies everywhere.

Built right and filled with all the Johnson features. Combines quality, efficiency and durability.

JOHNSON GAS APPLIANCE CO.
Cedar Rapids IOWA

THE BLOCK GAS MANTLE COMPANY

YOUNGSTOWN, OHIO

Manufacturers of

INCANDESCENT MANTLES

FOR

Natural and Artificial Gas Lamps, Gasoline Lamps, Kerosene Lamps, Liquid Gas Lamps

AND

MANTLES OF EVERY KIND AND DESCRIPTION

GAS ARC LAMPS

THORIUM NITRATE

Do not fail to
write us if

Quality, Price
and
Prompt Delivery
are of interest.

NOTE OUTSIDE
STOP COCK
AND NEEDLE
ADJUSTMENT
PAT. APPLIED
FOR



BLOCK No. 17
Indoor Arc



BLOCK No. 26
Five Mantle Outdoor Arc

OUR POLICY OF THE PAST AND FOR THE FUTURE:



"We give our trade the
benefit of conditions"





FOR PUMPING GAS WELLS

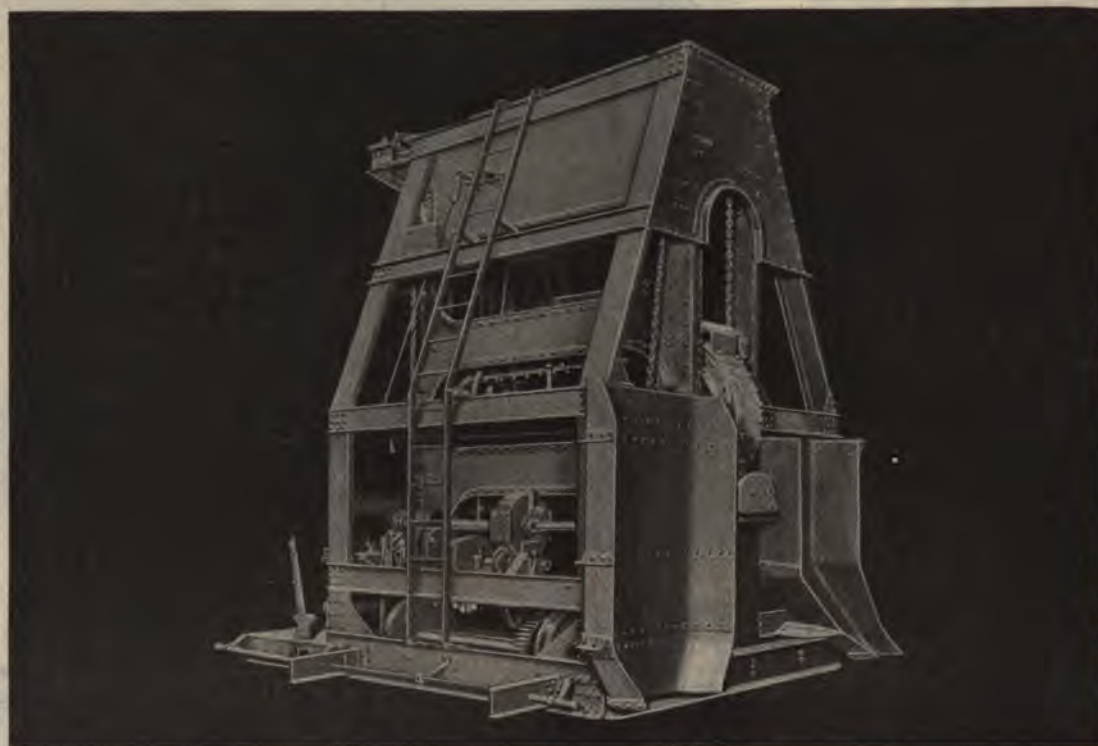
The most positive acting Gas Pump — Rotary Type — now on the market. See how the curved wings scoop up the air — every bit of gas is sucked into the machine to its entire capacity and the centrifugal force of the rotating wings — holding them against the cylinder does not permit gas to get back — it is all pushed into the pipe for delivery — these wings you will note, *take up their own wear!* No other pump will do this but **LEIMAN BROS. ROTARY POSITIVE GAS PUMPS.**

No leakage at the shaft bearings, they're gas tight — nine sizes to select from — 2 to 338 cubic feet per minute or less, as required may be pumped — *Get the best gas pump made it costs no more.*

Also used with all sorts of gas appliances, melting furnaces, forges, blowpipes, etc. — widely used with bottle filling machines, labelling, wrapping and paper feeding devices such as printing presses, folders, rulers, etc.

LEIMAN BROS. 81 - BG-6P WALKER ST.
NEW YORK

MAKERS OF GOOD MACHINERY FOR 35 YEARS



DE BROUWER

CHARGING AND DISCHARGING MACHINES

for horizontal retorts of any length.

Uniform charges can be laid throughout the retort by use of weight hoppers provided with DeBrouwer Chargers.

The weight hopper can be filled from a storage bunker on the Charger or from a continuous overhead retort house bunker.



The **BARTLETT HAYWARD CO.**
Engineers and Founders
BALTIMORE NEW YORK



The Tendency Today Is Toward

Cast Iron Gas Meters



The Sprague Meter is the only cast iron gas meter that has proven successful for both Natural and Artificial Gas.

Installing Sprague Meters is protection against extra expense and worry should you decide to manufacture gas.

THE SPRAGUE METER COMPANY

Company Member of American Gas Association

BRIDGEPORT, CONN.

BRANCH WAREHOUSES:

LOS ANGELES, CALIF.
161 No. Anderson Street

DAVENPORT, IOWA
316 LeClair Street

SAN FRANCISCO, CALIF
431 Sutter St.,



Reeves Vertical Gas Engine and Compressor Built in One Unit

This type of unit is built in all sizes up to 225 H. P.

This unit consists of one, two or three power cylinders and one compressor cylinder, depending on the size of engine and requirements.

This is one of the most compact units on the market—built on one foundation, which results in low cost of installation, due to reduced freight, hauling and installing charges. Continuous operation under the most difficult conditions proves its reliability at all times.

It eliminates belts from engine to compressor.

Operating efficiency per unit of fuel cost is remarkably high.

This unit is ideal for gas boosting stations, gasoline plants, or wherever gas or air compressor is desired.

For full data write or wire.

HOPE ENGINEERING & SUPPLY COMPANY

∴

∴

Mt. Vernon, Ohio



LUDLOW VALVES

Are Reliable and the Best for Natural Gas

If the valves you buy are labelled Ludlow, you are safe. Can't be otherwise for every valve undergoes a rigid test and inspection before we let it go. All parts both iron and bronze are extra heavy. The SEATS HAVE GROUND FACES and all joints are absolutely tight.

Ludlow valves are carried in stock by all the leading supply companies in the oil and natural gas districts.



THE LUDLOW VALVE MFG. CO., TROY, N. Y.

BRANCHES :

PITTSBURG
First National Bank Bld'g

KANSAS CITY
R. A. Long Bld'g

NEW YORK
62 Gold Street

CHICAGO
633 The Rookery
PHILADELPHIA
Harrison Bld'g

BOSTON
Oliver Bld'g

CLEVELAND GAS METERS

For Registering Natural and Manufactured Gas

LARGE CAPACITY "A" METERS--Heavily Built

Especially Successful for Natural Gas Use

TYPE "B" METERS For Slow Speed Operation

METER REPAIRING

CLEVELAND GAS METER CO.

COMPANY MEMBER OF AMERICAN GAS ASSOCIATION

718 MISSION STREET
SAN FRANCISCO, CAL.

2170-2180 EAST 65th STREET
CLEVELAND, OHIO



LOOK
Through Our Catalogue No. 18
AND YOU WILL FIND
RECORDS
OF
DRESSER
Steel Pipe Coupling
INSTALLATIONS
THAT PROVE
SPEED and ENDURANCE

Remarkable record made with Dresser Couplings -- 171-mile sixteen inch Natural Gas line laid in 90 days stands 350-pound test. (See page 104.)

The first Dresser Coupled line was laid at Malta, Ohio, nearly 30 years ago. This line is still in use. (See pages 94 to 109 for more evidence.)

S. R. DRESSER M'F'G COMPANY
BRADFORD, PENNA., U. S. A.

CLARK JEWEL

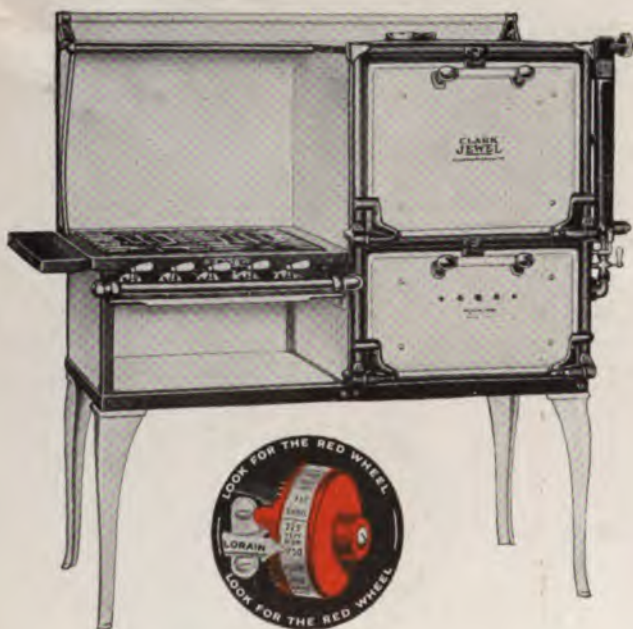
M AINTENANCE costs are cut down by the Lorain. Why? Because Lorain reduces gas range complaints. A careful checking up of your complaints will no doubt show that many of them come from housewives dissatisfied with the results of the gas range oven. Lorain automatically provides the correct baking heat the moment the housewife turns the red wheel to the desired temperature. She cannot go wrong.

Large Oven Capacity

Smoothness of surface, mechanical excellence and symmetry of design are characteristics of Clark Jewel all-steel, Lorain-equipped gas ranges. With ovens 14 inches high and 20 inches deep, there is large capacity for full meal cooking. Cabinet ranges can be had with white enameled splashers, or with the addition of enameled legs, oven top and high shelf (as below), or all enameled. In addition to a full line of domestic ranges, there is a full line of special Lorain-equipped Clark Jewel school stoves and restaurant stoves.

George M. Clark & Co. Div.

American Stove Company
CHICAGO ILLINOIS



NEW PROCESS

AT the present time when electricity is so extensively used for lighting, the logical and most important market for gas is as a fuel. When in competition with cheaper fuels its greatest appeals are Convenience and Service. Hence anything that can better either of these qualities adds materially to consumer-satisfaction—thereby facilitating the activities of the Department of New Business.

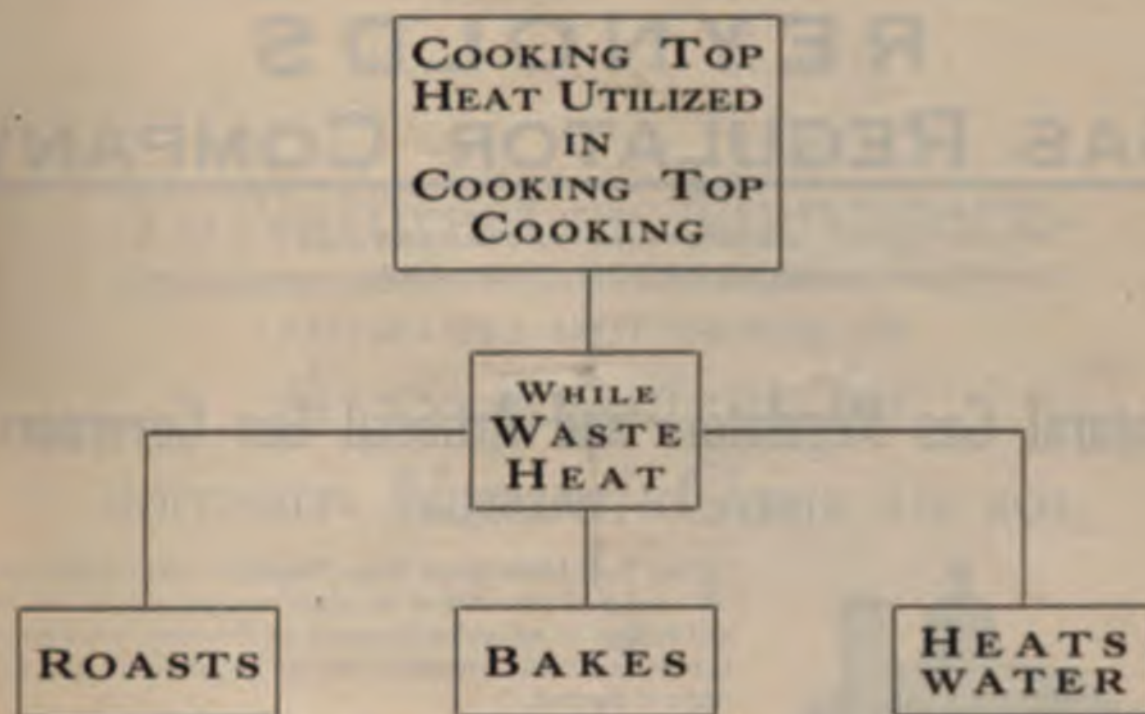
No Visible Bolts

The New Process Box Cabinet Ranges are clean-cut, attractive, medium priced stoves. No bolts visible on front, sides and top. Made in three patterns—ovens 14½, 16½ and 18½ inches wide. Right or left hand ovens. All patterns are made with the famous Lorain Oven Heat Regulator. Let us send you samples now. Complete information on request.

New Process Stove Co. Div.

American Stove Company
CLEVELAND OHIO





**No Other Range Does It That
Burns Gas**

SCOTT
"FOR THRIFT"



ASK US FOR THE MOST INTERESTING GAS
RANGE LITERATURE YOU HAVE EVER READ

NOTE THIS

Just as the cabinet range was designed to give greater comfort when cooking so is the Scott Gas Range designed to give greater service from the formerly waste top-cooking heat. If you do not desire the water heating feature it is omitted and a saving in cost to you given.

**The Scott Gas
Appliance Co., Inc.**
WASHINGTON, D. C.

WILL W. BARNES
MANAGER OF SALES

WEST COAST

San Francisco, Cal., Furniture Exchange
Los Angeles, Cal., 1221 Santa Fe Ave.



Connected with American Radiators by pipes, GAS ARCOLA furnishes healthful hot-water warmth to every room.

Connected with the kitchen tank GAS ARCOLA will also furnish an abundance of hot water at minimum cost.

The GAS ARCOLA

for Radiator Heating—Hot Water Heating— Garage Heating

HERE is the newest baby of the Gas Industry! Long awaited—for it is built on the same identical principles as the famous coal burning ARCOLA—it is bringing for the first time to both the manufactured and natural gas industries an opportunity to furnish healthful hot-water warmth through Radiators, from gas as fuel.

The GAS ARCOLA is the simplest of devices. It is Radiator and Boiler combined. Equipped at the base with a specially designed gas burner, it is as simple to operate as a gas stove, absolutely free from fumes or odor, and economical of fuel.

As a Boiler, connected with Radiators, it warms the room in which it is placed (usually the kitchen) and, connected with radiators by pipes, it furnishes healthful hot-water warmth to every room in the house.

As a Hot-Water Heater, it is equipped with an automatic temperature regulator which keeps the

hot-water tank full of hot water at an even temperature of 130° to 160° at all times. If the temperature rises beyond this the regulator shuts off the fire; when it falls below 130° it lights the fire again. The GAS ARCOLA therefore gives the owner a maximum of hot water at a minimum of cost.

As a Garage Heater, it is connected with one Radiator furnishing an abundance of hot-water warmth in a few moments when desired. When the car is in use the gas burner is turned low, keeping the garage above freezing temperature but burning a minimum amount of gas.

GAS ARCOLA can be used in many other ways. And best of all, its initial cost is surprisingly small and it is a great economizer of fuel.

Send today for an illustrated booklet about GAS ARCOLA giving full details, specifications and sizes. Liberal selling arrangements are offered to all dealers in gas equipment. Simply mail a post card or your letterhead to either address below.

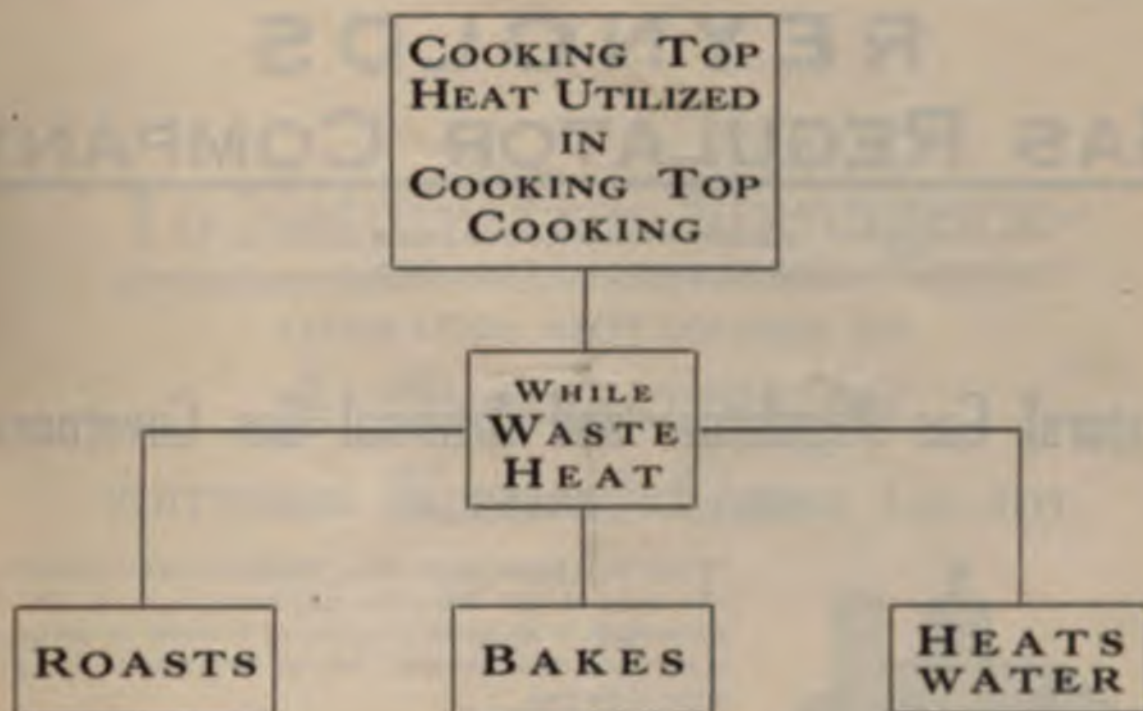
AMERICAN RADIATOR COMPANY

IDEAL Boilers and AMERICAN Radiators for every heating need

104 West 42nd Street
NEW YORK

Dept. 110

816 So. Michigan Avenue
CHICAGO



**No Other Range Does It That
Burns Gas**

SCOTT
FOR THIRTY



NOTE THIS

Just as the cabinet range was designed to give greater comfort when cooking so is the Scott Gas Range designed to give greater service from the formerly waste top-cooking heat. If you do not desire the water heating feature it is omitted and a saving in cost to you given.

**The Scott Gas
Appliance Co., Inc.**
WASHINGTON, D. C.

WILL W. BARNES
MANAGER OF SALES

WEST COAST
San Francisco, Cal., Furniture Exchange
Los Angeles, Cal., 1727 Santa Fe Ave.

ASK US FOR THE MOST INTERESTING GAS
RANGE LITERATURE YOU HAVE EVER READ

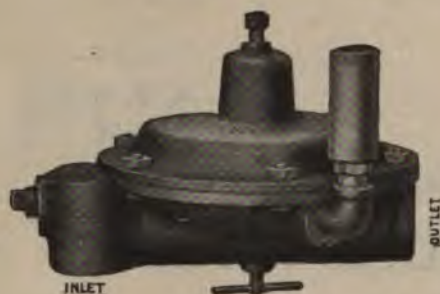
REYNOLDS GAS REGULATOR COMPANY

MAIN OFFICE AND WORKS
ANDERSON, INDIANA

WE MANUFACTURE EXCLUSIVELY

Natural Gas Regulators and Artificial Gas Governors

FOR ALL KINDS OF PRESSURE REDUCTION



**LITTLE GIANT HOUSE
REGULATOR**

THE No. 1 Little Giant House Regulator has 1" connections and will take care of an inlet pressure up to 300 lbs. and reduce to an outlet pressure of 6 ounces to one pound. Is regularly made automatic but can be furnished non-automatic if desired.

The No. 2 size has 1½" connections, is made non-automatic only, and will take care of an inlet pressure up to 100 pounds and reduce to an outlet pressure of 6 ounces to one pound.

The Little Giant House Regulators are sold by all the leading supply stores in the United States.

THE No. 4 High Pressure Service Governor has 2" pipe connections. Will take care of a varying inlet pressure up to 60 pounds and reduce same to an outlet pressure of 2½" to 15" or 5" to 25" as ordered.



**No. 4 HIGH PRESSURE SERVICE
GOVERNOR**



**SINGLE DISTRICT STATION
GOVERNOR**

THE Single District Station Governor is used in town and city plants where high pressure does not exceed 50 pounds and is made to reduce to inches of water pressure. Will give a steady outlet pressure of 2½" to 6" or 6" to 12" as ordered regardless of the variation of the high or inlet pressure.

We make Station Governors in sizes from 2" to 20" inclusive.

Our years of experience is at your service.

Tell us your conditions and we will recommend the proper size and style governors for your requirements.

To Natural Gas Managers:-

*A Supplement for
Natural Gas*

is

***BLUE
GAS***

consult.

The U. G. I. Contracting Company

PHILADELPHIA

PITTSBURGH, PA. --- 928 Union Arcade Bldg.

CHICAGO OFFICE --- Peoples Gas Building

The
"FINAL TOUCH"

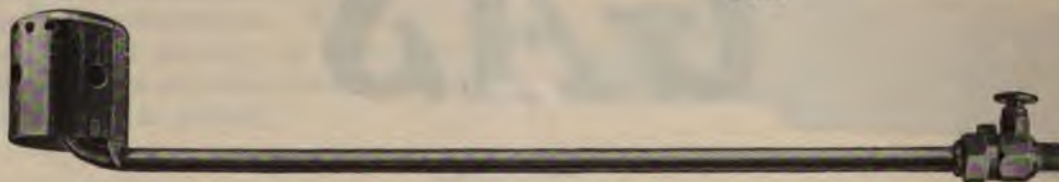
on a gas range is a

"RUTZ"

*You can't afford to offer
your merchandise without it*

"JUST PRESS THE BUTTON"

Rutz



Milwaukee Gas Specialty Co.

Milwaukee, Wisconsin

U. S. A.





Our Pledge To You

DURING our 22 years of uninterrupted service as a source of gas burning appliance supply, we have incurred a steadily growing sense of obligation to the Gas Companies of America.

This obligation rests upon us more heavily today than ever before, for the present year is by far the most active and successful in our history.

We fully realize that the new production records set by our factories have been made possible only by the whole-hearted and efficient sales efforts of the Gas Companies, fully 90% of whom are our direct customers, dis-

tributing by far the major share of our product.

We are glad to make this public acknowledgment and to pledge ourselves to the continuance of the policies which have made Humphrey Radiantfire the standard article in its field.

Our co-operation during 1923 will be even broader and more comprehensive, and our continued endeavor will be to make the Radiantfire business of every Gas Company an annually increasing source of sales and gas consuming profit.

GENERAL GAS LIGHT COMPANY

Pittsburgh 44 West Broadway Kalamazoo Cincinnati 748 Mission Street Atlantic City
New York Buffalo San Francisco

The HUMPHREY
Radiantfire
TRADE MARK REG. U.S. PAT. OFF.

SIMPLE — SAFE — ECONOMICAL



TRIPLE ELBOW
CONNECTION



DOUBLE ELBOW CONNECTION
WITH ONE OFFSET SWIVEL



STRAIGHT CONNECTION
WITH TWO OFFSET SWIVELS

The Triple Elbow has been used for years with marked success. If service riser pipe is out of plumb, this connection compensates for the variance and removes all strain.

The Double Elbow is adapted for conditions where riser or service pipes come through the ceiling.

The Straight with two offset swivels compensates for any difference in width of risers.

Either of these connections compensates for any difference in the width of the meter between tube screws while **The Triple** or **The Double** are particularly adapted to the substitution of a smaller or larger meter without difficulty. The type of shelf, if any, is optional.

We carry a full stock of Meter Connections
with straight or offset threaded swivels in
all sizes both brass and malleable iron.

Nathaniel Tufts Meter Works

OF

AMERICAN METER COMPANY
INCORPORATED

455 Commercial Street
BOSTON, MASS.





METRIC METAL WORKS

OF

AMERICAN METER COMPANY
INCORPORATED

ERIE, PA.

*METERS FOR NATURAL GAS
UNDER ANY CONDITIONS*

OUR experts have made the most thorough and painstaking study of natural gas conditions and requirements. The result of their experience is at your service.



The **WALES** Automatic Water Heater

COMPARE THE WALES HEATER WITH
ANY OTHER HEATER ON THE MARKET

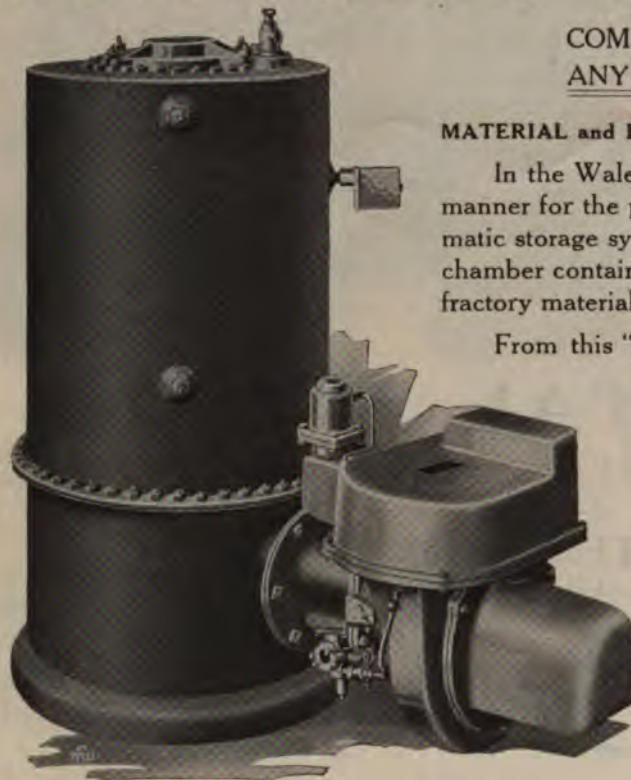
MATERIAL and DESIGN

In the Wales, Steam Boiler construction is utilized in a scientific manner for the purpose of water heating. It is a self contained automatic storage system. The inner core of the Wales is the combustion chamber containing the charcoal iron water tubes and filled with refractory material.

From this "stored heat," air flow is absolutely excluded during periods of non-operation and radiation practically eliminated because of the surrounding water envelope and insulated shell.

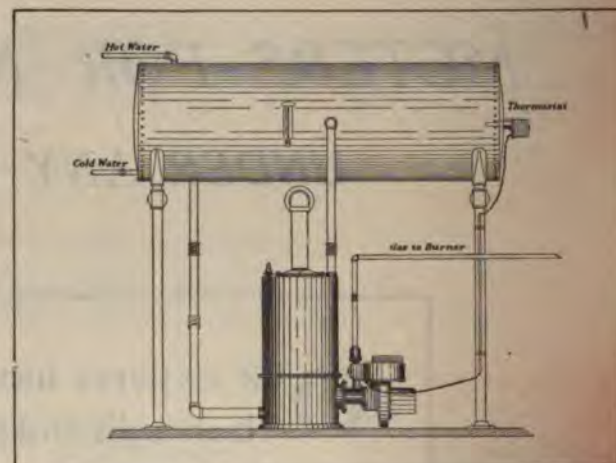
EFFICIENCY and SAFETY

Our guarantee of 86% efficiency is conservative. Using the stack temperature to pre-heat feed water nearly 98% efficiency is realized. A positive thermostatic pilot switch prevents the gas valve from opening unless the pilot is lighted. A single fan blast burner that can not back-fire.



The No. 2A size will deliver 300 gallons of water per hour with an 80° rise plus the 30 gallons storage of the heater. Used with a storage tank for greater storage reserve in the usual way. Ease of installation and freedom from maintenance costs with small floor space requirements please the shop department.

Size No. A as shown above Lists at \$500 complete F. O. B. Kalamazoo, Mich. Trade discount on application.



THE **WALES** COMPANY

KALAMAZOO

MICHIGAN



Usual Beauty and Unusual Convenience Distinguish This Range



even features make
it a more conven-
ient and better bak-
ing oven.

The ease with which any product can be sold depends upon how great value it offers the purchaser. A-B Gas Ranges are notably easy to sell, because of the many special features which win the instant approval of the housewife.

Women are immediately attracted by the handsome, durable enamel finish of the range. They recognize how easy it is to keep such a range clean; how attractive it will always look in their kitchen.

The many oven features promise convenience that is seldom obtainable in even the finest range. Such distinctive improvements as the A-B oven heat regulator; electrically lighted oven; glass oven door; rust-proof aluminum alloy oven lining and asbestos-insulated door handles are so unusual in their desirability as to make the sale of an A-B Range remarkably easy.

Throughout the entire A-B Line of Coal, Gas and Combination Ranges the same careful consideration of the user's preference has built a series of ranges of exceptional popularity. We will be glad to send you our special selling plans and other information.

A-B Stove Company, Battle Creek, Mich.

A-B ^{GAS} Ranges

Company Member of American Gas Association

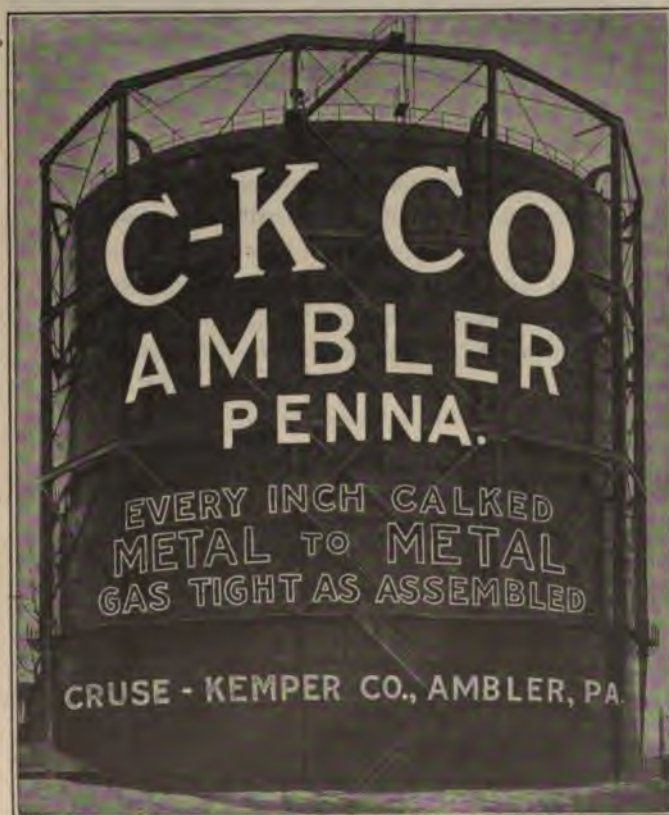
—SHORTAGE OF GAS—

IS INDUCING THE
MIXING OF
THE TWO GASES **NATURAL AND MANUFACTURED**
AS A RESULT
GAS-HOLDERS ARE REQUIRED.

Where Manufactured Gas is produced Gas-Holders are a necessity, this therefore applies where the two gases are to be mixed.



"C-K CO" Gas Holders are reliable Holders and are already in use by several Natural Gas Companies, the new field for Gas Holders. Extensively the Manufactured Gas Companies use "C-K Co." Holders.



Engineers Contractors

Manufacturers

Prompt Deliveries Assured By Large Stock
Constantly Replaced.


STEEL TANKS, PURIFIERS,
FLUES, STACKS, HOPPERS

PLATE WORK

WE ERECT EVERYWHERE

CRUSE-KEMPER CO.
AMBLER, PENNA.

CABLE: CRUSKEMPER, AMBLER, Western Union Code

	COAL	
GAS	 <p>Jarvies Combination Gas, Oil and Coal Hot Air Furnace</p>	OIL
Jarvies		Jarvies

The burner installation as shown, permits a combination of gas and oil — gas and coal — or gas, coal or oil separately.

NOTICE THE BURNER COMBINATION

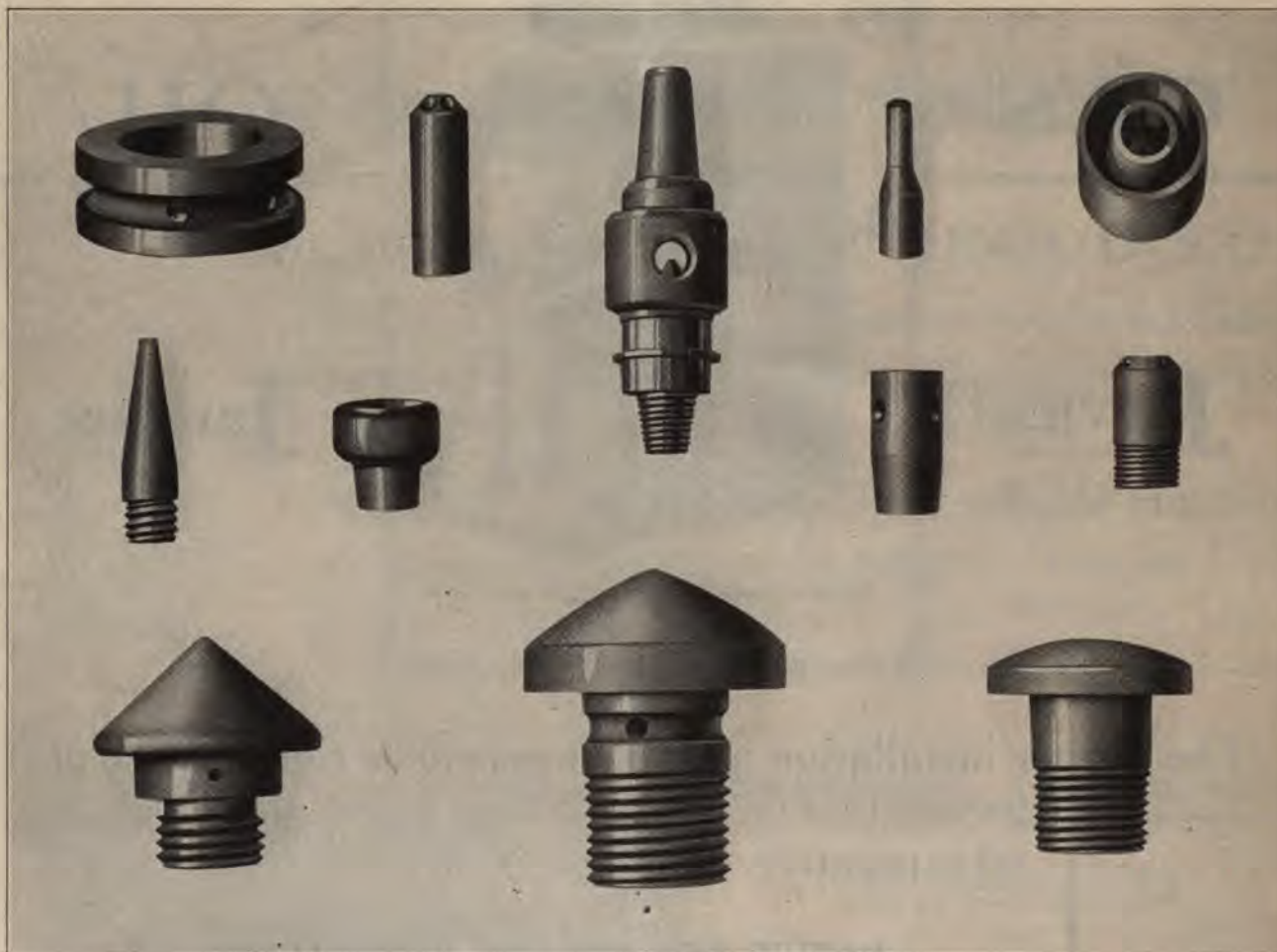
Gas burner entering side of furnace eliminates any interference with putting in coal or removing ash.

Installation or removal of the oil burner is a matter of a few minutes only if coal or gas is preferred.

The JARVIES GAS & OIL BURNER CO.

Kansas City, Mo.

Lava Tips - Gas Outlets



Do you manufacture gas appliances?

Investigate the advantages of lava where gas outlets are incorporated.

Lava which can be machined to special design is a heat-resisting, non-corrosive insulating material.

Unchanging - Durable - Uniform.

Discuss your insulation problems with us.

AMERICAN LAVA CORPORATION

29-59 WILLIAM STREET

CHATTANOOGA - - TENNESSEE

MANUFACTURERS OF LAVA TIPS AND HEAT RESISTANT INSULATION

A CHAIN OF NO WEAK LINKS

The Chaplin-Fulton Regulators
are of proportionate strength throughout.

SENSITIVE



ACCURATE

The Fulton Differential Gas Relief Valve.

The range of flow varying considerably in the measuring of gas for city consumption, in order to measure the flow with orifice meters it was necessary to have a number of meters and arrange to turn them off and on in conformity with the flow changes. This was true until the advent of the FULTON DIFFERENTIAL GAS RELIEF VALVE.

The opening through the orifice meter is considerably smaller than the pipe diameter and offers resistance to the flow of gas. It is this differential pressure which is employed to operate the Differential Valve.

The valve is of the positive opening type and remains closed until the pressure on the main line reaches a predetermined maximum.

The Chaplin-Fulton Mfg. Co., 23-24 Penn Ave., Pittsburgh, Penn.

When Shutting Off Street Mains Use **GOODMAN STOPPERS and DEPENDABLE GAS MAIN BAGS**

**Wing Nut Holds It
Firmly in Place**



GOODMAN STOPPER

PACIFIC COAST REPRESENTATIVE:

C. B. BABCOCK COMPANY
768 MISSION STREET
SAN FRANCISCO, CAL.

Bags Built in Three Sizes

TYPE A—Invisible Seam or Seamless Bag.

TYPE B—Reinforced Seams, heavier and stronger than Type A.

TYPE C—Canvas Covered Bags for use in Mains coated with Tar or Oil.

Sold subject to your inspection and approval

When ordering specify Type wanted

SAFETY GAS MAIN STOPPER COMPANY

523 ATLANTIC AVENUE
BROOKLYN, N. Y.

"Emco" Meters and Regulators

For Artificial and Natural Gas



Meters for Low and
High Pressures.

Proportional Meters

Provers, Gauges and
Burners

Regulators
of all kinds



WRITE FOR CATALOGUE AND PRICES

EQUITABLE METER COMPANY

Company Member of American Gas Association

432-434-436 First Avenue,

PITTSBURGH, PA.

H. A. FISHER COMPANY

Consulting Engineers

1014-16-18 House Building, - Pittsburgh, Pa.

SPECIALISTS in production of Gasoline from Natural Gas and in Examination and Appraisal of Oil, Gas and Gasoline properties; and, in Analyzing samples of Gas for Gasoline Content.

Standard Oil Subsidiaries

BOUGHT, SOLD AND QUOTED

Natural Gas and Oil Securities

JO. P. CAPPEAU SONS

225 Fourth Avenue
PITTSBURGH, PA.

415 Central Bank Bldg—
TULSA, OKLA.

New Types of Heaters Added to Welsbach Line

Two new heaters, the No. 27 and No. 29, are to be ready for Fall business. They are the latest products of Welsbach skill and genius, embodying every modern perfection of gas heater construction. In appearance, in finish, in the wonderful volume of heat they give, they will appeal instantly to your customers.

In the No. 23-B and No. 21-B sizes of

Welsbach GAS HEATERS

are incorporated all the perfections included in the new types. These comprise a new self-lighter, a longer manifold, single front legs, etc.

The addition of the new types of Welsbach heaters, one a ten-glower size, the other an eight-glower, will enable you to offer to your customers a complete line of Welsbach heaters. Each is the best in its size. And there is a size for every need—from the small bathroom heater to the larger ones for the fireplace—six heaters in all.

Don't place your order for the 1922 season until you have seen these new heaters. Our salesmen will call and demonstrate.

WELSBACH COMPANY

Room 101 Gloucester, N. J.
Member American Gas Association



No. 23-B



No. 27

*Standard equipment
includes fireguard*



No. 29

Standard equipment includes fireguard

WELCOME TO WELSBACH BOOTH
KANSAS CITY CONVENTION

Welsbach
PRODUCTS



Concerning Oxygen Purity

The LINDE standard of purity is more than a matter of mere figures. It is three fold:

A minimum purity of 99%.

LINDE plants are in fact producing oxygen of a purity substantially in excess of 99%.

A uniform purity.

Painstaking care to produce oxygen that can always be depended upon to produce uniform results.

An assured purity.

A system of quadruple checking and inspection that not only gives a continuous control of purity during production, but which finally proves the thoroughness of production control.

The efficiency of LINDE OXYGEN fully satisfies the demands of the largest and most exacting users in America.

No oxygen user, large or small, should close an arrangement for oxygen supply without first securing 1922 prices from the nearest LINDE District Sales Office.

For Your Convenience—Distributing Stations at every important industrial center.

At Your Service—District Sales Offices in these cities:

ATLANTA
CLEVELAND
NEW YORK

BOSTON
DALLAS
PHILADELPHIA
SAN FRANCISCO

BUFFALO
DETROIT
PITTSBURGH

CHICAGO
MILWAUKEE
ST. LOUIS

THE LINDE AIR PRODUCTS COMPANY

Carbide and Carbon Building, 30 East 42nd Street, New York

THE LARGEST PRODUCER OF OXYGEN IN THE WORLD







